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Water quality — Vocabulary

Qualité de l'eau — Vocabulaire

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Foreword

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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).

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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 147, *Water*, Subcommittee SC 1, *Terminology*.

This first edition cancels and replaces the all editions of ISO 6107-1 to ISO 6107-8, which have been technically revised.

The main changes compared to the previous edition are as follows:

— Obsolete terms were removed

— Most terms related to waste water treatment committees such as ISO TC 275 Sludge recovery, recycling, treatment and disposal and ISO TC 224 Service activities relating to drinking water supply, wastewater and storm water systems were removed because they are not in the scope of ISO TC 147 Water quality

— Most terms were amended and enhanced to align with specific fields such as microbiology, chemistry etc.

— Addition of terms that were not covered in previous editions.

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 definitions in this edition of ISO 6107 are based on available standards and aim to harmonise the understanding of terms used within ISO TC147 *Water quality* to facilitate clear understanding and application of the water quality standards and to reduce variation of interpretation as far as possible. Source information is provided where available. This standard aims to improve and feed the terminology database for ISO TC147 and to serve as a reference document for all water quality characterisation committees and users.

Terms and the interpretation thereof may differ in various fields i.e.: chemistry microbiology and ecotoxicology. This is indicated in brackets, if applicable, after the term being defined.

ISO 6107 is restricted to definitions for terms which appear in standards of ISO/TC 147, *Water quality*.

Water quality — Vocabulary

1 Scope

This document defines terms used in certain fields of water quality characterization.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
abiotic degradation
non-biological degradation
process by which a substance is chemically or physically broken down to smaller

Note 1 to entry: Examples of chemical or physical processes are hydrolysis and photolysis.

3.2
absolute salinity
ratio of mass of dissolved material in seawater (in grams) to the mass of seawater (in kilograms)

Note 1 to entry: In practice, this quantity cannot be measured directly and a practical salinity is defined for reporting oceanographic observations.

3.3
abstraction
removal of water from any source, either permanently or temporarily, so that it ceases to be part of the resources of that area, or is transferred to another source within the area

3.4
acclimatization
process of adaptation of populations of organisms to natural environmental changes or to long-term changes caused by human activities (such as those caused by continued discharge of industrial waste or sewage)

3.5
accuracy
closeness of agreement between a measured quantity value and a true quantity value of a *measurand* (3.31)

Note 1 to entry: The concept 'measurement accuracy' is not a quantity and is not given a numerical quantity value. A measurement is said to be more accurate when it offers a smaller measurement error.

Note 2 to entry: 'Measurement accuracy' is sometimes understood as closeness of agreement between measured quantity values that are being attributed to the measurand.

Note 3 to entry: See also ISO 13843 for water microbiology

3.6
acid rain water
rain water with a pH value of less than 5

3.7
acidity
presence of an excess of hydrogen ions over hydroxyl ions (pH < 7)

3.8
activated carbon treatment
process intended for the removal of dissolved and colloidal organic substances from water and waste water by adsorption on activated carbon

EXAMPLE For the amelioration of taste, odour or colour.

3.9
action limit
control limit
line on a *control chart* (3.139) used for judging the stability of a process

Note 1 to entry: Action lines are drawn on a control chart to represent action limits.

Note 2 to entry: When the measure plotted lies beyond an action limit, appropriate corrective action is taken on the process.

Note 3 to entry: These limits are based on the assumption that only 0,3 % of normally distributed results will fall outside these limits. Such an occurrence would strongly indicate that additional, assignable causes of variation might be present and that action might be required to identify and reduce them.

3.10
activated sludge
accumulated biological mass [*floc* (3.233)] produced in the treatment of wastewater by the growth of bacteria and other microorganisms in the presence of dissolved oxygen

3.11
activated sludge treatment
process for the biological treatment of wastewater in which a mixture of wastewater and *activated sludge* (3.10) is agitated and aerated

Note 1 to entry: The activated sludge is subsequently separated from the treated wastewater by sedimentation and is removed or returned to the process as required.

3.12
adsorption on activated sludge
adhesion of particles or molecules from a gas, liquid or dissolved solid (adsorbate) to a surface (called the adsorbent)

3.13
aeration
introduction of air into a liquid

3.14
aerobic condition
descriptive of a condition in which dissolved oxygen is present

3.15
aerobic organisms
aerobes
organisms generally requiring the presence of dissolved or gaseous oxygen for survival or multiplication

3.16
aerobic sludge digestion
biological process whereby primary, activated or co-settled sludges are partially oxidized by prolonged *aeration* (3.13), largely accomplished by endogenous respiration and predator activity

3.17
agglomeration
coalescence of flocs or particles of suspended matter to form larger flocs or particles which settle or may be caused to float more readily

3.18
aggressive water
water having a negative *Langelier index* (3.314)

3.19
aggressivity
tendency of a water to dissolve calcium carbonate

Note 1 to entry: See *Langelier index* (3.314).

3.20
air scouring
process of passing air under pressure upwards through a gravity filter to agitate the filtration medium/media, in order to loosen the retained solids before back-washing

3.21
algae
large group of single- or multi-cellular eukaryotic organisms, which usually contain chlorophyll or other pigments

Note 1 to entry: Algae are usually aquatic and capable of photosynthesis.

3.22
alkalinity
quantitative capacity of aqueous media to neutralize hydrogen ions

3.23
alpha factor
ratio of the oxygen transfer coefficient in mixed liquor to the oxygen transfer coefficient in clean water in an activated sludge plant

3.24
alternating double filtration
ADF
process for treatment of sewage by biological filtration in two stages with intermediate separation of humus by settlement

Note 1 to entry: At intervals, the order of use of the filters, but not of the humus tanks, is reversed. This allows operation of the plant at higher biological oxygen demand (BOD) loadings than possible with single filtration or ordinary double filtration, without troublesome accumulation of film at the surface of the filters and ponding.

3.25
ammonia stripping
method of removing ammoniacal compounds from water by making it alkaline and aerating

3.26
ammoniacal nitrogen
nitrogen present as free ammonia and as ammonium ions

3.27
ammoniation
chloramination
addition of ammonia to water to form chloroamines, following chlorination as a treatment process

3.28
ammonification
bacterial conversion of nitrogen-containing compounds to ammonium ions

3.29
anaerobe
anaerobic organism
organism requiring the absence of dissolved or gaseous oxygen for survival or multiplication

3.30
anaerobic condition
descriptive of a condition in which dissolved oxygen is absent

3.31
analyte
measurand
<chemical or physical parameter> substance to be analysed

Note 1 to entry: The specification of a measurand requires knowledge of the kind of quantity, description of the state of the phenomenon, body, or substance carrying the quantity, including any relevant component, and the chemical entities involved.

Note 2 to entry: In microbiology, the analyte is ideally defined as a list of taxonomically defined species

3.32
analytical portion
test portion

<microbiology> volume of particle suspension inoculated into a detector unit

Note 1 to entry: The detector unit can be, for example an agar plate, membrane filter, test tube or microscopic grid square.

3.33
analytical portion
test portion
<chemistry>measured amount (volume) of a test sample being used in a test.

3.34
anionic surface active agent
surface active agent which ionizes in aqueous solution to produce negatively charged organic ions, which are responsible for the surface activity

3.35
anoxic
condition in which the concentration of dissolved oxygen is so low that certain groups of microorganisms preferentially use oxidized forms of nitrogen, sulphur, or carbon as an electron acceptor

3.36
antagonism
decrease of a biological effect caused by another substance due to the presence of another substance

Note 1 to entry: The combined effect is less than the additive effects of the separate substances or organisms.

3.37
aphotic zone
part of a body of water in which there is insufficient light for effective *photosynthesis* (3.397)

3.38
apparent selectivity
<microbiology> ratio of the number of target colonies to the total number of colonies in the same sample volume calculated mathematically as selectivity

3.39
application range
range of concentrations routinely measured by a method

3.40
aquifer
water-bearing formation (bed or stratum) of permeable rock, sand, or gravel capable of yielding significant quantities of water

3.41
aquifer
<confined> underground layer of water-bearing permeable rock confined between two impermeable strata

3.42
aquifer
<unconfined> underground layer of water-bearing permeable rock in which the water table defines the upper boundary of the groundwater body

3.43
archaea

prokaryotic single celled organisms which lack cell nuclei and are morphologically similar to bacteria but radically different in molecular organization, with eukaryote-like metabolic pathways and enzyme production

3.44
area-integrated sample
composite water sample obtained after combining a series of samples taken at various locations from a body of water at a particular depth

3.45
area of influence
area influenced or expected to be influenced, based on the available information

3.46
area profile sample
series of individual water samples taken at various locations from a body of water at a particular depth

3.47
automatic sampling
process whereby samples are taken either discretely or continuously, independently of human intervention, and according to a predetermined programme

3.48
autotrophic bacteria
chemolithotrophic bacteria
microorganisms that are able to make their own energy by converting inorganic substances to organic substances that can be broken down

3.49
available chlorine
total available chlorine
chlorine present in the form of free chlorine or combined chlorine or both

3.50
background equivalent concentration
BEC
concentration of an element or substance that would produce the observed baseline when compared to zero

3.51
background growth
continuous cover of micro-colonies of non-mutated, non-target bacteria on the surface of a growth medium

3.52
backwashing
operation of cleaning a filter with water by reversing the direction of flow

Note 1 to entry: This is often aided by scouring with air.

3.53
bacteria
large group of microscopic, metabolically active, single-cell prokaryotic microorganisms with dispersed (not discrete) nucleus, mostly free-living, and usually multiplying by binary fission

3.54
bacteriological sample
sample taken aseptically in a sterile container and suitably preserved and handled for bacteriological examination

3.55
bacteriophage
group of particular viral agents whose life cycle occurs in specific bacterial hosts

Note 1 to entry: See also *viruses* (3.603).

3.56
balancing tank
tank designed to equalize the rate of flow or the composition of, for example, *drinking water* (3.193) to a distribution system or waste water to a treatment works

3.57
bank filtration
induced infiltration of river water through bankside gravel strata with the intention of improving the water quality

Note 1 to entry: A means for inducing this type of infiltration is by pumping water from wells sunk into the gravel strata so as to create a hydraulic gradient.

3.58
bankside storage
storage of raw river water in a reservoir on the river bank

3.59
baseline survey
survey with emphasis on characterization and description of biotic and abiotic conditions in the survey area, and which forms the background reference level for future monitoring and/or follow-up surveys

3.60
benthic deposit
accumulation, on the bed of a watercourse or lake or the sea, of deposits possibly containing organic matter and arising from such causes as natural erosion, biological processes or discharge of wastewater

3.61
benthic region
generally the lowest region of a water body, including sediments and a bedrock layer, where living organisms are present

3.62
beta factor
ratio of the oxygen saturation value in mixed liquor to the oxygen saturation value in clean water at the same temperature and atmospheric pressure in an activated sludge plant

3.63
bias
estimate of a systematic measurement error

3.64
bioaccumulation
process of accumulation of a substance in organisms or parts thereof

3.65
bioassay
biotesting
technique for evaluating the biological effect, either qualitatively or quantitatively, of various substances in water by means of changes in a specified biological activity

3.66
biochemical oxidation
process whereby microorganisms oxidize matter (mainly organic) in water

3.67
biochemical oxygen demand
BOD
mass concentration of dissolved oxygen consumed under specified conditions by the biological oxidation of organic and/or inorganic matter in water

3.68
biodegradability
susceptibility of an organic substance to *biodegradation* (3.68)

3.69
biodegradation maximum level
maximum degree of biodegradation of a chemical compound or organic matter in a defined test above which no further biodegradation takes place during the test

Note 1 to entry: The biodegradation maximum level is expressed as a percentage.

[SOURCE: ISO 10708:1997, 3.9, modified — Note 1 to entry was previously part of the definition, the term has been changed from "maximum level of biodegradation".]

3.70
biodegradation phase
time from the end of the lag phase in a defined test until about 90 % of the maximum level of *biodegradation* (3.68) has been reached

[SOURCE: ISO 10708:1997, 3.10, modified — The part of the definition “it is expressed in days” is not included.]

3.71
biofilm
film, consisting of living, dead or moribund organisms, that forms on the surfaces of a support medium

3.72
biological filter
bed of inert material with large holes through which wastewater is caused to percolate for the purpose of purification by means of an active biological film (bacteria bed) on the inert material

Note 1 to entry: Also known as trickling filter percolating filter.

3.73
biomass
total mass of living material

3.74
biomineralization (3.344)
mineralization (3.344) brought about by biological activity

3.75
biota
living components of an aquatic system

3.76
biotic index
numerical value used to describe the biota of a water body, serving to indicate its biological quality

3.77
biotope
area of uniform environmental conditions providing a living place for a specific assemblage of plants and animals

Note 1 to entry: Biotope is almost synonymous with the term habitat, but while the subject of a habitat is a species or a population, the subject of a biotope is a biological community.

3.78
black water
waste water and excreta from water closets, excluding water from baths, showers, hand basins and sinks

3.79
blank value
observed value obtained when measurement is made on a sample identical to the sample of interest, but in the absence of the *determinand* (3.172)

[SOURCE: ISO 5667-14:2014, 3.5, modified — The term has been changed from 'blank'.]

3.80
blank sample
sample used for zeroing an instrument during a test procedure and can correct for potential error from existing colour or *turbidity* (3.588) in the sample before reagents are added

3.81
blowdown
removal of liquids or solids, or a mixture of both, from a processing or storage vessel, or a line, by the use of pressure

3.82
boiler water
water of adequate quality present in a boiler when steaming is, or has been, in progress

3.83
bottom sediment
solid material deposited by settling from suspended particulate matter (SPM) onto the bottom of bodies of water, both moving and static

3.84
bourne
spring which flows intermittently or seasonally

3.85
brackish water
water containing dissolved solids at a concentration higher than acceptable standards for intended use

Note 1 to entry: The concentration of total dissolved solids in brackish water can vary from 1 000 mg/l to 10 000 mg/l. Brackish water is less saline than sea water (1 000 to 10 000 mg/l of TDS for brackish vs up to 35 000 mg/l for sea water).

Note 2 to entry: The concentration of total dissolved solids of many brackish waters can vary considerably over space and/or time

3.86
breakdown point
smallest percentage of outlier interlaboratory testing above which the estimation method may be entirely inapplicable

3.87
break-point chlorination
addition of chlorine to water to the point where free available residual chlorine increases in proportion to the incremental dose of chlorine being added

Note 1 to entry: At this point, all of the ammonia has been oxidized.

3.88
brine
water naturally or artificially containing a higher concentration of salts, especially sodium chloride, than sea water

3.89
brook
small stream often fed by natural springs

3.90
calibration blank solution
reagent blank solution
prepared in the same way as the calibration solution or reagent but leaving out the *analyte* (3.31)

3.91
calibration check solution
control standard
reference substance solution produced independently of the stock solutions

EXAMPLE a solution from an alternative batch or manufacturer. The solution should contain all of the substances to be determined.

3.92
calibration solution
solution used to calibrate the whole procedure of the determination or an individual part of it (e.g. extraction or the instrumental measurement). It is prepared from (a) stock solution(s) or from a certified standard

3.93
calibration standard
solution prepared from a standard and/or stock solutions and used to calibrate the response of the instrument with respect to analyte concentration