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Soil quality — Vocabulary

Qualité du sol — Vocabulaire

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Foreword

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This document was prepared by Technical Committee ISO/TC 190, *Soil quality,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 444, *Environmental characterization of solid matrices,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 11074:2015), which has been technically revised. It also incorporates the Amendment ISO 11074:2015/Amd 1:2020.

The main changes are as follows:

— terminological entries have been reorganised with all the terms and definitions placed in Clause 3 in alphabetical order;

— terms that have different definitions depending on the context have been grouped, and the domain has been added in angle brackets to differentiate them.

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

This document defines soil quality terms. The previous editions (ISO 11074:2015 and ISO 11074/Amd 1:2020) presented terms and definitions in separate clauses to differentiate the terms about e.g. sampling, remediation. This became more and more artificial, since soil quality experts with different expertise need to work closely together and there is a greater need for one term list instead of multiple ones, where experts first need to find out in which clause a specific term is located. In this edition, all the terms are included in Clause 3.

For some terms, there are different definitions, depending on the context. These terms are presented after each other, with the differentiating domains between brackets: <context>. Often these are a general domain and a specific domain, resulting in different definitions.

Though the terms apply to all other ISO/TC 190 soil quality standards, this document does not cover all the terms used in ISO/TC 190 soil quality standards.

New and revised standards are published continuously though time. The revision periods of soil quality standards differ. That means that definitions of the same terms can be different in specific soil quality standard and in this document.

NOTE For general terms relating to quality, see ISO 9000.

Soil quality — Vocabulary

1 Scope

This document defines terms used in the field of soil quality.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

3.1
abandoned hazardous site
hazardous site (3.201) left by the owner or other responsible party in unmanaged condition

3.2
abandoned industrial site
industrial *site* (3.443) left by the owner or other responsible party in unmanaged condition

3.3
abandoned potentially hazardous site
site (3.443), left by the owner or other responsible party in unmanaged condition, whose history leads to a suspicion that it can be hazardous

3.4
abandoned waste disposal site
waste disposal *site* (3.443) left by the owner or other responsible party in unmanaged condition

3.5
abiotic decomposition
decomposition (3.113) by physical and/or chemical processes (e.g. photolysis, *hydrolysis* (3.211), *oxidation* (3.305), and *reduction* (3.373))

3.6
abiotic degradation
degradation (3.116) by physical and/or chemical processes

3.7
above-ground sampling
process of taking *samples* (3.398) from material that has been deposited on the ground surface

EXAMPLE Samples are taken from a *stockpile* (3.496) (including *bulk volumes* (3.64) of *excavated soils* (3.154)), deposit of waste or embankment (see ISO 18400-104:2018).

3.8
accumulation
increase of the *concentration* (3.86) of a substance in soil due to the fact that the *substance input* (3.508) is larger than the *substance output* (3.509)

Note 1 to entry: Substance output includes material which is degraded.

3.9
active protective measure
process designed, for example, to control *groundwater* (3.191) migration or *gas migration* (3.178)

EXAMPLE Pumped water extraction or gas extraction system.

3.10
active soil gas sampling
sampling (3.410) by extracting a certain volume of *soil gas* (3.454)

3.11
actual increment size
amount of material that is present in an *increment* (3.218)

3.12
actual sample size
amount of material that is present in the *sample* (3.398)

3.13
aerobic
descriptive of a condition with molecular oxygen available

3.14
aerobic biological treatment
biological treatment (3.46) in the presence of oxygen

3.15
aftercare management
measures applied on completion of remedial works or as an integral part of a *containment* (3.90) strategy to ensure continued *effectiveness* (3.142) over the long term

3.16
aggressive soil conditions
soil conditions potentially damaging to buildings and construction materials

3.17
air-sparging
introduction of air under pressure into the *groundwater* (3.191)

3.18
aliphatic hydrocarbon
acyclic or cyclic, saturated or unsaturated carbon compound, excluding aromatic compounds

3.19
aliquot
known amount of a *homogeneous* (3.204) material, assumed to be taken with negligible *sampling error* (3.413)

Note 1 to entry: The term is usually applied to fluids.

3.20
ammonification
microbial *degradation* (3.116) of organic nitrogen to ammonia

3.21
amplicon
DNA or RNA fragment obtained by *polymerase chain reaction (PCR)* (3.330) from a template

3.22
anaerobic
descriptive of a condition in which molecular oxygen is not available

3.23
anaerobic biological treatment
biological treatment (3.46) in the absence of gaseous or soluble oxygen

3.24
anaerobic transformation
reaction occurring under exclusion of oxygen (*reducing* (3.372) condition)

Note 1 to entry: This generally occurs when the redox potential (Eh) is less than 200 mV.

3.25
analytical and testing strategy
plan comprising the *samples* (3.398) to be analysed or tested, the parameters to be measured, sample preparation methods, and the analytical or testing methods to be employed

Note 1 to entry: There should be associated quality assurance methods.

3.26
analytical sample
portion of material, resulting from the original *sample* (3.398) or *composite sample* (3.83) (3.84) by means of an appropriate method of *sample pretreatment* (3.402) and having the size (volume/mass) necessary for the desired testing or analysis

3.27
anisotropy
property of a soil or other volume of material to have different spatial variation structures depending on direction and distance

Note 1 to entry: Usually illustrated in a *variogram* (3.566).

3.28
anthropogenic change
influence on soil properties caused by human activities

3.29
anthropogenic concentration
concentration (3.86) of a substance in a soil resulting from anthropogenic origin

Note 1 to entry: See ISO 19204:2017.

3.30
anthropogenic ground
deposits which have accumulated through human activity

Note 1 to entry: These can consist of natural materials placed/replaced by man (e.g. clay) or man-made materials (e.g. refuse).

Note 2 to entry: See ISO 18400-104:2018.

3.31
aromatic hydrocarbon
hydrocarbon (3.210) of which the molecular structure incorporates one or more planar sets of six carbon atoms that are connected by delocalized electrons, numbering the same as if they consisted of alternating single and double covalent bonds

3.32
assessment criteria
criteria set up to help decide if a *site* (3.443) requires further investigation or other action (e.g. *remediation* (3.380))

Note 1 to entry: The assessment criteria aid in interpreting the results of a quantitative *risk* (3.393) or other assessment.

Note 2 to entry: For *risk assessments* (3.395), assessment criteria are often *threshold* (3.534) values for *doses* (3.131) or media *concentrations* (3.86), such as tolerable daily intake, tolerable air, water, and soil concentrations set by international, national, or local authorities.

3.33
available water capacity
soil water (3.479) content usable by plants based on the effective root penetration depth

Note 1 to entry: The usable *field capacity* (3.166) in the effective root zone is expressed in millimetres of water column.

Note 2 to entry: The available water capacity (AWC) is generally taken to be the water content between field capacity (FC) and the permanent *wilting point* (3.572) (PWP) or 10 kPa to 1 500 kPa.

3.34
avoidance behaviour
tendency (of an organism) to avoid the test soil while preferring the *control soil* (3.95)

3.35
background concentration
concentration (3.86) of an element or a substance *characteristic* (3.70) of a soil type in an area or region arising from both natural sources and anthropogenic diffuse sources such as atmospheric deposition

3.36
background value
statistical characteristics (3.495) of the total (natural pedo-geochemical and anthropogenic) content of substances in soil

3.37
basal respiration
microbial soil respiration without addition of substrate

3.38
basal respiration rate
R_B
constant mass of CO_2 released or mass of O_2 consumed per unit mass of soil per unit time without substrate addition

3.39
bedrock
in situ naturally consolidated rock either underlying drift deposits such as glacial till or exposed by past or current erosion processes

3.40
bioaccessibility
fraction of a substance in soil or *soil material* (3.459) that is liberated in (human) gastrointestinal juices and thus available for absorption

3.41
bioavailability
<general> degree to which chemicals present in the soil can be absorbed or metabolised by a human or ecological *receptor* (3.370) or are available for interaction with biological systems

3.42
bioavailability
<human health> fraction of a substance present in ingested soil that reaches the systemic circulation (blood stream)

3.43
bioconcentration factor
BCF
ratio of the *concentration* (3.86) of a substance in an organism to that in the soil

3.44
biodegradation
molecular *degradation* (3.116) of an organic substance resulting from the complex actions of living organisms

3.45
biodiversity
variability among living organisms on the earth, including the variability within and between species, and within and between ecosystems

Note 1 to entry: This is also often used to refer to the number and variety of organisms found within a specified geographic region.

[SOURCE: ISO 14050:2020, 3.8.22, modified —Note 1 to entry has been added.]

3.46
biological treatment
methods using the natural activities of plants or *microorganisms* (3.266), such as bacteria and fungi, to transform, destroy, fix or immobilise *contaminants* (3.91)

3.47
biomass
<general> total mass of living organisms or parts of them

Note 1 to entry: Biomass is expressed as fresh or dry mass of test organism or fresh or dry mass per test unit.

3.48
biomass
<fauna> total mass of test organisms or parts of them expressed as dry mass or fresh mass of test organism or dry mass or fresh mass per test unit

3.49
biomass
<plants> total mass of shoots, flowers and seed pods

Note 1 to entry: Biomass is expressed as dry mass per plant or, if needed, as dry mass per pot. During the test period, some of the test plants can reach different *growth* (3.194) stages and their water content can differ when the plants are harvested. Thus, the dry mass better represents the biomass produced during the growth period.

3.50
bioreactor
equipment in which biotreatment is applied to a solid, liquid, or slurry

3.51
bioremediation
use of *biological treatment* (3.46) methods to decontaminate soil or *groundwater* (3.191)

3.52
biosolid
organic product applied to soil

EXAMPLE Sewage sludge, compost, manure, industrial products.

Note 1 to entry: Without giving a specific context, biosolid is often regarded as a component of sewage sludge.

3.53
biotreatment bed
treatment bed
above-ground bed of soil designed to enhance *biodegradation* (3.44) processes, usually incorporating means of collecting leachate and often means of maintaining oxygen (in aerobic processes) and nutrient levels

Note 1 to entry: It can also include means of capturing released volatiles or means of maintaining *anaerobic* (3.22) conditions.

3.54
bioventing
in situ process in which vapour extraction or air infiltration rates, or both, are adjusted to optimize *biodegradation* (3.44) reactions

3.55
boiling point
BP
point at which the vapour pressure of a liquid equals the external pressure acting on the surface of liquid

Note 1 to entry: It is expressed in degrees Celsius.

3.56
boring
borehole
bore
hole of any predetermined diameter and length formed in any soil, geological formation, or man-made material by *drilling* (3.134)

3.57
bottom barrier system
in-ground (largely) horizontal barrier used to isolate or contain a *site* (3.443), or both

3.58
bound residues
non-extractable residues
chemical species in plants and soils, that cannot be extracted without significantly changing the chemical nature of these residues

EXAMPLE Chemical species originating from organic molecules.

Note 1 to entry: These non-extractable residues are considered to exclude fragments recycled through metabolic pathways leading to natural products.

3.59
break layer
stratum of high permeability granular material within a *cover system* (3.102)

Note 1 to entry: Its purpose is to stop upward capillary movement of soluble *contaminants* (3.91).

3.60
brownfield
<general> land affected by former uses

3.61
brownfield
<sustainable remediation> *site* (3.443) which:

— has been affected by former uses of the site or surrounding land;

— is derelict or underused;

— is mainly in fully developed or partly developed urban areas;

— requires intervention to bring it back to beneficial use; and/or

— can have real or perceived *contamination* (3.93) problems

3.62
bulk density
ratio of the mass of a quantity of material (or one phase) and the total volume occupied by this material (including other phases)

Note 1 to entry: This is typically a volumetric mass, but it is commonly named as “density”. The numerical values are identical or divided by the volumetric mass of water ($1\ t \cdot m^{-3}$) at 4 °C.

3.63
bulk sample
sample (3.398) resulting from the planned aggregation or the combination of sample units

Note 1 to entry: See also *composite sample* (3.83)(3.84).

[SOURCE: Reference [27]]

3.64
bulk volume
volume, including the solids and pores, of an arbitrary soil mass

3.65
capillary water
water held on soil particles due to unbalanced inter-molecular attraction at the liquid boundary

EXAMPLE The rise or depression of liquids in narrow tubes, the formation of films, drops, bubbles, etc.

3.66
carcinogen
substance that causes the development of malignant cells in animals or humans

3.67
certified reference material
CRM
reference material (3.374), one or more of whose property values are certified by a technically valid procedure accompanied by a certificate or any document allowing the identification of the origin of the certificate

3.68
chain-of-custody procedure
procedure to ensure *sample* (3.398) integrity (e.g. when transferred between the field and laboratory and within a laboratory) and to ensure that the sample will provide legally and technically defensible data

Note 1 to entry: See ISO 5667-3:2024, 3.2 for a definition of integrity.

3.69
channel sample
sample (3.398) obtained by removal of material in a channel-like shape from the soil using suitable equipment

3.70
characteristic
property or attribute of a material that is measured, compared, or observed

3.71
chemical treatment
treatment of contaminated soil, *sediment* (3.433), water, or other material in which the principal mechanism for *degradation* (3.116) or conversion to a less environmentally harmful form is a chemical reaction or combination of reactions

3.72
chemico-physical treatment
process-based treatment relying on combination of physical and chemical processes

3.73
classification system
ranking system
formalized system to perform a *preliminary assessment* (3.341)

Note 1 to entry: Formalized procedures can also aid in interpreting results of the *preliminary investigation* (3.342).

3.74
clay content
proportion of soil particles with a particle size < 2 µm

3.75
cloning vector
a small piece of DNA that can be stably maintained in an organism, and into which a foreign DNA fragment can be inserted for cloning purposes

3.76
cluster sample
composite sample (3.83) (3.84) for which the *increments* (3.218) are taken over a small area around a predefined *sampling point* (3.418)

Note 1 to entry: Sampled area is typically about 0,5 m^2 to 1,0 m^2.

Note 2 to entry: Material sampled is taken from within the same stratum or from material with the same *characteristics* (3.70).

3.77
community relations
processes involved in informing and consulting the local community affected by a *hazardous site* (3.201) and activities to investigate or remediate it

3.78
community relations plan
formal statement of measures to be taken to inform and consult the local community

3.79
competent authority
<contaminated sites> authority that assesses investigation results and takes decisions about the severity and urgency of the soil *contamination* (3.93) found, and that also assesses proposals for *remediation* (3.380) or *protective measures* (3.354)

Note 1 to entry: Depending on the *site* (3.443) and the country, the competent authority can be very different.

3.80
compliance control
performance control
investigation or programme of ongoing inspection, testing, or *monitoring* (3.276) to confirm that a *remediation strategy* (3.383) has been properly implemented (e.g. all contaminated materials have been removed) and/or when a *containment* (3.90) approach has been adopted, that this continues to perform to the specified level

3.81
compliance point
location (e.g. soil or *groundwater* (3.191)) where the *assessment criteria* (3.32) is measured to check if the criteria are met