



SLOVENSKI STANDARD

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Kakovost vode - Navodilo za ocenjevanje hidromorfoloških značilnosti vodotokov

Water quality - Guidance standard for assessing the hydromorphological features of rivers

Wasserbeschaffenheit - Anleitung zur Beurteilung hydromorphologischer Eigenschaften von Fließgewässern

Qualité de l'eau - Guide pour l'évaluation des caractéristiques hydromorphologiques des rivières

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Water quality - Guidance standard for assessing the hydromorphological features of rivers

Qualité de l'eau - Guide pour l'évaluation des
caractéristiques hydromorphologiques des rivières

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hydromorphologischer Eigenschaften von
Fließgewässern

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 230.

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COMITÉ EUROPÉEN DE NORMALISATION
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prEN 14614:2018 (E)

European foreword

This document (prEN 14614:2018) has been prepared by Technical Committee CEN/TC 230 “Water analysis”, the secretariat of which is held by DIN.

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This document will supersede EN 14614:2004.

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Introduction

In the past, many countries in Europe assessed river 'quality' simply in terms of water chemistry or pollution within river channels. A more comprehensive understanding of rivers is needed, however, in view of global issues such as climate change, to answer pressing ecological questions such as those arising from the EC Water Framework Directive (WFD), the EC Habitats Directive and EC Floods Directive, to underpin the International Convention on Biodiversity, or to assess proposed river engineering work and to evaluate the effectiveness of restoration schemes and other catchment developments.

River habitats and physical processes have suffered historically from a wide range of human impacts, especially changes in land use since the Second World War. In most European countries there is now widespread agreement among environment and conservation agencies to see modified rivers returned to a more natural condition. This implies a need to evaluate areas deserving protection and those requiring rehabilitation, and to encourage sustainable management of river systems throughout Europe.

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prEN 14614:2018 (E)**1 Scope**

This document is focused on the structural features of rivers, on geomorphological and hydrological processes, and on river continuity. It provides guidance on the features and processes to be taken into account when characterizing and assessing the hydromorphology of rivers. It is based on methods developed, tested, and compared in Europe. Its main aim is to improve the comparability of hydromorphological assessment methods, data processing and interpretation. Although it has particular importance for the WFD by providing guidance on assessing hydromorphological quality, it has considerably wider scope for other applications. In addition, while recognizing the important influence of hydromorphology on plant and animal ecology, no attempt is made to provide guidance in this area, but where the biota have an important influence on hydromorphology these influences are included.

NOTE A case study illustrating the application of this standard is given in Gurnell and Grabowski[1].

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:

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

3.1**alluvium**

sediments deposited by rivers

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3.2**anabranching river**

river with more than one channel separated by vegetated islands

3.3**aquifer**

underground layer of water-bearing permeable rock, rock fractures or unconsolidated materials (gravels, sands) from which groundwater can be extracted

3.4**armouring**

where the river bed surface comprises coarser particles than the underlying river bed layers as a result of removal (mobilization and transport) of the finer particles from the bed surface layer

3.5**attribute**

specific recorded element of a hydromorphological feature

EXAMPLE 'boulders' and 'silt' are substrate attributes; 'sheet piling' and 'gabions' are attributes of engineered banks.

[SOURCE: EN 14614:2004, 2.2]

3.6**backswamp**

low-lying marshy area that lies between the valley margin and the natural levée of an alluvial channel

3.7**bank**

side of a river channel or island which extends above the normal water level and is only completely submerged during periods of high river flow

Note 1 to entry: In the context of this standard, the bank top is marked by the first major break in slope, above which cultivation or development is possible.

[SOURCE: EN 14614:2004, 2.4, modified]

3.8**bankfull**

level at which water begins to spill out of the channel onto the floodplain

[SOURCE: EN 14614:2004, 2.5, modified]

3.9**bars**

in-channel, elevated sediment deposits exposed during periods of low flow, including side bars, particularly point bars and counterpoint bars on the convex and concave sides of meander bends, and mid-channel bars within the channel

3.10**baseflow**

sustained component of streamflow, usually resulting from drainage of groundwater, but also from drainage of large lakes, swamps, soils, snow and ice packs

3.11**baseflow index**

measure of the ratio of the long-term baseflow to total stream flow, often representing the slow, continuous contribution of groundwater to river flow

3.12**baseflow channel width, depth and slope**

the width, depth and water surface slope of the part of the channel that conveys the baseflow

3.13**bench**

see 'berm'

3.14**berm**

natural or artificial, flat-topped, shelf along the margin of a river channel that is exposed above water level during low flows, but is submerged during high flows: natural berms are vegetated features composed of sediments deposited by the river to the baseflow level, which evolve into benches as further deposited sediment raises their surface gradually to higher elevations within the river channel

[SOURCE: EN 14614:2004, 2.6, modified]

prEN 14614:2018 (E)**3.15****boulder step**

accumulation of boulders (> 256 mm) transverse to and crossing the river channel creating a step in the river's long profile

3.16**braiding (CEN definition amended)**

river whose bankfull channel is naturally divided by mid-channel bars into at least two channels.

Note 1 to entry: See also 'bars'.

[SOURCE: EN 14614:2004, 2.8, modified]

3.17**burial**

accretion of fine sediment over coarser bed material (opposite of **armouring**)

3.18**cascade**

stream bed covered with disorganized boulders in steep confined channels

3.19**catchment water budget**

accounting of the volumes of water entering, leaving, and stored in a catchment, during a specified time period usually of one or more years

3.20**characterization**

selection of properties or special features of a spatial unit that are uniquely relevant to identifying its hydromorphological processes, forms and pressures

3.21**chute**

side channel across a bar or floodplain, shortcutting the flow in the main channel

3.22**coarse sediment**

sediment of grain size at or larger than 'very fine gravel' (diameter ≥ 2 mm, ≤ -1 phi)

EXAMPLE gravels, cobbles, boulders

Note 1 to entry: The phi scale defines sediment grain size as the negative logarithm to the base 2 of the grain diameter in millimetres.

3.23**confinement**

degree to which the lateral movement of a river channel is confined by the presence of valley sides or terraces

3.24**counterpoint bar**

side bar type that develops in the flow separation zone along the concave bank of tight river bends

3.25**connectivity**

see 'lateral connectivity' and 'longitudinal connectivity'

3.26**crevasse**

breach in natural levée

3.27**crevasse-splay**

local accumulation of sand or gravel, deposited by water escaping from the river channel through a crevasse

3.28**culvert**

arched, enclosed or piped structure constructed to carry water under roads, railways and buildings

[SOURCE: EN 15843:2010, 3.8]

3.29**dune**

large fine sediment (sand–silt) river bed feature typical of low-gradient, alluvial sand-bed rivers that is linear in plan, aligned perpendicular to the flow, with a gentle upstream and steep downstream cross profile

Note 1 to entry: Dunes can be distinguished from ripples by their larger height (10^{-1} m / 10^1 m) and wavelength (proportional to the water depth).

3.30**embankment
artificial levée**

artificial bank built to raise the natural bank level thereby reducing the frequency of flooding of adjacent land

[SOURCE: EN 14614:2004, 2.13]

3.31**fine sediment**

sediment of grain sizes equal to or smaller than 'very coarse sand' (≤ 2 mm diameter, ≥ 2 mm -1 phi) i.e. sands, silt, clay

Note 1 to entry: The phi scale defines sediment grain size scale as the negative logarithm to the base 2 of the grain diameter in millimetres.

3.32**floodplain**

valley floor adjacent to a river that is (or was historically) inundated periodically by flood waters and is formed of sediments deposited by the river

[SOURCE: EN 14614:2004, 2.14, modified]

prEN 14614:2018 (E)**3.33****flow regime**

typical magnitude, frequency, timing, and duration of river flows that drive physical and some ecological processes and so, within the constraints of valley slope and confinement, influence the sizes and types of river channel that may be present

3.34**fluvial geomorphology**

scientific study of the physical processes, form and functioning of rivers and streams and their physical interactions with the surrounding landscape

3.35**forced bars**

non-mobile bars whose position is forced by the presence of natural (e.g. large wood) or artificial structures

Note 1 to entry: See also 'bars'.

3.36**forced pools**

non-mobile pools whose position is forced by the presence of natural (e.g. large wood) or artificial structures

Note 1 to entry: See also 'pool'.

3.37**fluvial (physical or geomorphological) feature**

landform or deposit created by river (fluvial) processes

[SOURCE: EN 14614:2004, 2.15, modified] [SIST EN 14614:2021
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3.38**gabion**

wire basket containing stones, used for river-bed or bank protection

[SOURCE: EN 14614:2004, 2.16]

3.39**hydromorphology**

morphological and hydrological characteristics of rivers including the underlying processes from which they result

[SOURCE: EN 14614:2004, 2.18, modified]

3.40**large wood**

piece of wood that is more than 1 m long and 10 cm in diameter

3.41**landscape unit**

area displaying distinctive combination of environmental attributes such as altitude, topography and geology

3.42**lateral connectivity
continuity**

freedom for water and sediments to move between the channel and the floodplain/hillslopes

[SOURCE: EN 14614:2004, 2.19, modified]

3.43**lateral movement**

freedom for a river channel to move across a floodplain

[EN 14614:2004, 2.20]

3.44**longitudinal connectivity
longitudinal continuity**

freedom for water, sediments and biota to move along the river channel

3.45**meander**

one of a series of regular, sinuous curves along the course of a stream

3.46**planform**

the geometric form of a river channel viewed from above

EXAMPLE sinuous, straight

[SOURCE: EN 14614:2004, 2.22, modified] [EN 14614:2021](https://standards.iteh.ai/catalog/standards/sist/82c8a176-a691-440f-b59f-418717b21743/sist-en-14614-2021)

3.47**pool**

distinctly deeper part of a river bed that is usually no longer than one to three times the channel's bankfull width, and where the hollowed river bed profile is sustained by scouring

[SOURCE: EN 14614:2004, 2.24, modified]

3.48**pseudo-meandering**

river with a meandering, baseflow channel, defined by alternate side bars within a less sinuous bankfull channel

3.49**rapids**

areas of steep confined river beds composed of boulders and large cobbles, often organized into irregular lines approximately perpendicular to the channel and partially or completely crossing the channel width that are only exposed at low flow

3.50**reach**

section of river along which boundary conditions are sufficiently uniform that the river maintains a near consistent internal set of process–form interactions