



**SLOVENSKI STANDARD**  
**oSIST prEN 15843:2024**  
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**Kakovost vode - Navodilo za določanje stopnje spreminjanja hidromorfoloških značilnosti vodotokov**

Water quality - Guidance standard on determining the degree of modification of river hydromorphology

Wasserbeschaffenheit - Anleitung zur Beurteilung von Veränderungen der hydromorphologischen Eigenschaften von Fließgewässern

Qualité de l'eau - Guide pour la détermination du degré de modification de l'hydromorphologie des rivières

**Ta slovenski standard je istoveten z: prEN 15843**

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English Version

## Water quality - Guidance standard on determining the degree of modification of river hydromorphology

Qualité de l'eau - Guide pour la détermination du degré de modification de l'hydromorphologie des rivières

Wasserbeschaffenheit - Anleitung zur Beurteilung von Veränderungen der hydromorphologischen Eigenschaften von Fließgewässern

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## **European foreword**

This document (prEN 15843:2024) has been prepared by Technical Committee CEN/TC 230 “Water analysis”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15843:2010.

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## Introduction

This document will enable broad comparisons to be made of river hydromorphological modifications throughout Europe (e.g. for reporting by the European Environment Agency). The assessment of river 'quality' in Europe has evolved over the past 30-40 years. From its original focus on organic pollution it now relies on methods for analysing a range of chemical and biological attributes. More recently, several European countries have developed systems for evaluating the hydromorphological features of rivers. The EC Water Framework Directive (WFD) has reinforced the need for this broader view of river 'quality' through its requirement for determining 'ecological status' based on macrophytes, phytobenthos, invertebrates and fish. The Directive also requires that hydromorphological and physico chemical conditions should be suitable for supporting biological communities.

EN 14614:2020, *Water Quality – Guidance standard for assessing the hydromorphological features of rivers* describes a standard for field survey and feature recording, whereas this standard gives guidance on assessing the modification of river hydromorphological features. It focuses especially on human pressures that affect rivers; thus, it may be helpful for implementing the WFD by indicating the extent to which these pressures might have caused a departure from hydromorphological reference conditions. Although the procedure described in this standard enables the hydromorphological characterization and assessment of rivers, it does not attempt either to describe methods for defining high status for hydromorphology under the WFD or to link broadscale hydromorphological classification to assessments of ecological status. However, the content of this standard has the potential to contribute to both of these.

In addition to its relevance to the WFD, this standard has applications also for nature conservation, meeting the goals of the Biodiversity Strategy (e.g. re-instating connectivity), environmental impact assessment, river basin management, flood risk management (e.g. the EC Floods Directive) and setting targets for river restoration work.

## Document Preview

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## 1 Scope

This document provides guidance on characterizing the modifications of river hydromorphological features described in EN 14614:2020. Both standards focus more on morphology than on hydrology and continuity, and include a consideration of sediment and vegetation. This document will enable consistent comparisons of hydromorphological forms and processes between rivers within a country and between different countries in Europe, providing guidance for broad-based characterization across a wide spectrum of hydromorphological modification of river channels, banks, riparian zones and floodplains. Although of lesser focus, it considers the indirect effects of catchment-wide modifications to these river and floodplain environments. Its primary aim is to assess 'departure from naturalness' as a result of historical and modern human pressures on river hydromorphology, and it suggests suitable sources of information (see EN 14614:2020, Table A.1) which may contribute to characterizing the modification of hydromorphological properties. In doing so, it does not replace methods that have been developed for local assessment and reporting.

Decisions on river management for individual reaches or catchments require expert local knowledge and vary according to river type.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14614:2020, *Water quality - Guidance standard for assessing the hydromorphological features of rivers*

## 3 Terms and definitions

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

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

#### **aquatic vegetation morphotype**

morphological character of aquatic vegetation, which combines the shape of the leaves, whether the leaves are emergent, floating or submerged, and whether or not the vegetation is rooted in the river bed

### 3.2

#### **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

[SOURCE: EN 14614:2020, 3.4]

### 3.3

#### **bank**

side of a river channel or island which extends above the normal (e.g. mean) water level and is only completely submerged during periods of high river flow

[SOURCE: EN 14614:2020, 3.7]

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

**3.4****bar**

in-channel, elevated sediment deposit exposed during periods of low flow, which may be a side bar (including a point or counterpoint bar, located respectively along the convex or concave bank of a meander bend) or a mid-channel bar

[SOURCE: EN 14614:2020, 3.9]

**3.5****bench**

natural flat-topped shelf that evolves from a natural berm as further deposited sediment raises its surface gradually to higher elevations within the river channel

[SOURCE: EN 14614:2020, 3.14]

**3.6****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

[SOURCE: EN 14614:2020, 3.13]

Note 1 to entry: Natural berms are vegetated features composed of sediments deposited by the river to the baseflow level.

**3.7****biogeographical region**

extended area, usually distinguished by its global position, climate and topography, within which species live under broadly similar environmental conditions

**3.8****confinement**

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

[SOURCE: EN 14614:2020, 3.21]

**3.9****culvert**

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

[SOURCE: EN 14614:2020, 3.25]

**3.10****embankment**

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

[SOURCE: EN 14614:2020, 3.27]



**3.11****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 14614:2020, 3.29]

**3.12****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

[SOURCE: EN 14614:2020, 3.30]

**3.13****hydromorphology**

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

[SOURCE: EN 14614:2020, 3.36]

**3.14****hydro-peaking**

rapid and frequent fluctuations in flow resulting from hydropower generation to meet peak demands in electricity

**3.15****hyporheic zone**

spatio-temporally dynamic ecotone between the surficial benthic substrate and the underlying aquifer

[SOURCE: EN 16772:2016, 2.13]

**3.16****large wood**

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

[SOURCE: EN 14614:2020, 3.37]

**3.17****lateral connectivity**

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

[SOURCE: EN 14614:2020, 3.39]

**3.18****longitudinal connectivity**

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

[SOURCE: EN 14614:2020, 3.41]

**3.19****planform**

geometric form of a river channel viewed from above

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EXAMPLE sinuous, straight

[SOURCE: EN 14614:2020, 3.43]

**3.20  
reach**

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

[SOURCE: EN 14614:2020, 3.47]

Note 1 to entry: In some situations, chemical changes along the length of a river, as well as physical and hydrological ones, may also be important in defining river reaches.

**3.21  
reinforcement**

strengthening of river beds and banks for various purposes (e.g. ford construction, erosion control) using materials such as boulders, sheet piling, geotextiles, etc

[SOURCE: EN 14614:2020, 3.48]

**3.22  
ridge and swale**

arcuate, alternating floodplain features, where the ridge is a rising, elongated deposit and the swale is a depression, which develop from scrolls as they are incorporated into the floodplain

[SOURCE: EN 14614:2020, 3.49]

**3.23  
riparian zone**

transitional, semi-terrestrial area of land adjoining a river channel (including the river bank) that is regularly inundated and influenced by fresh water and can influence the condition of the aquatic ecosystem (e.g. by shading and leaf litter input and through biogeochemical exchanges)

[SOURCE: EN 14614:2020, 3.51]

Note 1 to entry: ‘riparian corridor’ is the linear extension of this concept along a channel or reach length; in this document, the term ‘riparian zone’ does not include the wider floodplain.

**3.24  
river channel cross profile**

two-dimensional representation of river channel morphology perpendicular to the flow

[SOURCE: EN 14614:2020, 3.54]

**3.25  
river hydromorphological type**

group of river channels displaying similar morphological and hydrological characteristics and their associated processes

[SOURCE: EN 14614:2020, 3.55]