
**Oprema za zimska vzdrževalna dela - Cestni vremensko-informacijski sistemi - 3.
del: Zahteve za merjene vrednosti pri stacionarni opremi**

Winter maintenance equipment - Road weather information systems - Part 3:
Requirements on measured values of stationary equipment

Winterdienstausrüstung - Straßenzustands- und Wetterinformationssysteme - Teil 3:
Anforderungen an gemessene Werte der stationären Anlagen

Matériels de viabilité hivernale - Systèmes d'information météorologique routière - Partie
3: Exigences relatives aux valeurs mesurées par des matériels fixes

Ta slovenski standard je istoveten z: prEN 15518-3

ICS:

07.060	Geologija. Meteorologija. Hidrologija	Geology. Meteorology. Hydrology
13.030.40	Naprave in oprema za odstranjevanje in obdelavo odpadkov	Installations and equipment for waste disposal and treatment
35.240.99	Uporabniške rešitve IT na drugih področjih	IT applications in other fields

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English Version

**Winter maintenance equipment - Road weather
information systems - Part 3: Requirements on measured
values of stationary equipment**

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Wetterinformationssysteme - Teil 3: Anforderungen an
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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 337.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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European foreword

This document (prEN 15518-3:2022) has been prepared by Technical Committee CEN/TC 337 “Road operation equipment and products”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15518-3:2011.

In comparison with the previous edition, the following technical modifications have been made:

- Added definition and requirements for:
 - freezing temperature,
 - ice,
 - hoar frost,
 - ice film thickness,
 - snow layer thickness;
- Differentiation between embedded and remote (non-invasive) road sensors and specific requirements for:
 - road surface temperature,
 - road surface condition,
 - water film thickness,
 - ice film thickness (only for remote sensors),
 - snow layer thickness (only for remote sensors);
- Adaptation of the definition and differentiation between active and passive measurement methods in the requirements for freezing temperature;
- Added requirements for:
 - amount of de-icing agent,
 - amount of precipitation;
- Adaption of requirements for:
 - road body temperature,
 - air temperature,
 - relative humidity,
 - precipitation intensity;
- Removed requirements for snow height (on or next the road).

prEN 15518-3:2021 (E)

EN 15518, *Winter maintenance equipment — Road weather information systems*, is currently composed with the following parts:

- *Part 1: Global definitions and components;*
- *Part 2: Road weather — Recommended observation and forecast;*
- *Part 3: Requirements on measured values of stationary equipment;*
- *Part 4 (CEN/TS): Test methods for stationary equipment.*

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Introduction

Road Weather Information Systems (RWIS) are complex structures used for road maintenance decision support, which feature as a rule the following components: meteorological sensors and instruments, road condition sensors (embedded or remote), transmission technology, computer systems for processing, representation and storing of information, road weather forecasts and alarms, in relation to traffic control and traffic information systems and more.

A stationary road weather station performs the acquisition of road and meteorological information at a fixed location.

This document lays down the requirements for the recommended sensor components of a road weather station of a Road Weather Information System (RWIS). In the description of requirements, a distinction is made between the sensor components forming a basis road weather station for winter use and the recommended complementary optional sensor components.

Parameters which are not in the standard but offered on the market could be useful, but are left out of this minimum standard due to the fact that there are currently no professional methods available to verify these parameters.

The aim is to ensure extensive combination and interchangeability within the systems.

With a set terminology for the components and the meteorological expressions an attempt is made to counteract a diversity of terms and designations for identical phenomena.

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1 Scope

This document specifies the terminology and performance requirements for all sensor components of stationary equipment within a Road Weather Information System (RWIS).

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.

CEN/TS 15518-4, *Winter maintenance equipment — Road weather information systems — Part 4: Test methods for stationary equipment*

EN 15144, *Winter maintenance equipment — Terminology — Terms for winter maintenance*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15144 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 <https://www.electropedia.org/>

NOTE The following definitions have been established specifically for the RWIS domain.

3.1 Surface

3.1.1

pavement surface temperature

<remote measurements> effective radiation temperature of a pavement surface and the contaminant layer; <embedded measurements> conductive temperature on the pavement surface

3.1.2

road body temperature

temperature of the road in a specific depth in the construction layers

3.1.3

amount of de-icing agent

mass of de-icing agent on a road surface per square metre

3.1.4

freezing temperature

temperature at which a liquid begins to freeze on a road surface

Note 1 to entry: The requirement specifications for freeze temperature in this document are valid under well-known and reproducible laboratory environment conditions. The real environment condition on a road under traffic result in high variations due to the highly variable distribution of water film and de-icing agent concentration over the pavement surface and some other influences.

3.1.5

road surface condition

qualification of the status of road surface affected by road weather phenomenon

3.1.6**water film thickness**

mean thickness of the film of water present on a flat surface, measured on a specific measurement area observed by a sensor

Note 1 to entry: If a sensor provides also ice film and snow layer thickness, then this parameter means the liquid portion. If a sensor doesn't provide ice film and snow layer thickness, then water film thickness means all kind of water content (water equivalent).

3.1.7**ice**

water on a surface freeze from a liquid state to solid state, if surface temperature drops down below *freezing temperature* (3.1.4) or if liquid precipitate falls on a surface whose temperature is below freezing and immediately freezes into solid stage

3.1.8**hoar frost**

ice crystals deposit formed from contact of airborne moisture with a surface whose temperature is below freezing

Note 1 to entry: Hoar frost differs from ice in that the frost crystals grow independently and, therefore, have a more granular texture. Currently known surface sensor technologies are not able to detect Hoar Frost directly. The condition can only be classified by the measuring station with the help of atmospheric sensors.

3.1.9**ice film thickness**

Mean thickness of the film (or layer) of ice (water equivalent of frozen water) present on a flat surface, measured on a specific measurement area observed by a sensor

3.1.10**snow layer thickness**

approximative layer of snow (water equivalent of snow) present on flat surface, measured on a specific measurement area observed by a sensor

Note 1 to entry: Snow layer thickness gives an indication about the layer of snow, but accuracy cannot be defined nor verified.

3.2 Atmospheric parameters**3.2.1****relative humidity**

filling rate of the mass of air with water vapour

3.2.2**precipitation**

falling water from the atmosphere in liquid and/or solid form which can be observed and measured on ground

3.2.3**rain**

precipitation in liquid form

prEN 15518-3:2021 (E)**3.2.4****snow**

water vapour in the atmosphere that has been condensed directly into ice without going through the liquid stage

Note 1 to entry: The small ice crystals absorb and freeze additional water vapor from surrounding air, growing into snow crystals. The clusters of snow crystals are formulated into snowflakes.

3.2.5**amount of precipitation**

thickness of the layer of water obtained by precipitation (rain or melted solid precipitation) on a horizontal surface

3.2.6**intensity of precipitation**

amount of precipitations per unit of time

3.2.7**wind speed**

distance which traverses the air per unit of time

Note 1 to entry: Wind speed is either instantaneous or mean wind.

3.2.8**gust of wind**

sudden and transient strengthening of the wind, resulting in a brief and sudden increase in the instantaneous *wind speed* (3.2.7), compared to the value achieved by its mean wind

3.2.9**wind direction (instantaneous and mean wind)**

direction from where the wind is blowing with respect to the magnetic north

3.2.10**visibility**

distance defined by the meteorological optical range

3.2.11**global radiation**

solar radiation received by a horizontal surface from the galactic centre, directed towards the ground, within a spectral range from 0,3 μm to 3 μm

3.3 General**3.3.1****protection shield**

shelter built in such a manner that it protects its contents against solar radiation, precipitations and condensation and contributes at the same time to ventilation

3.3.2**sampling interval**

time between two readings meant for the elaboration of a reported value