SLOVENSKI STANDARD
oSIST prEN 15597-2:2017

01-april-2017

Oprema za zimsko vzdrževanje - Trosilniki (stroji za trosenje peska) - 2. del: Zahteve za raztros in njihovo preskušanje

Winter maintenance equipment - Spreading machines (gritting machines) - Part 2: Requirements for distribution and their test

Winterdienstausrüstung - Streumaschinen - Teil 2: Anforderungen an die Streustoffverteilung und deren Prüfung

Équipement de viabilité hivernale - Épandeuses - Partie 2: Exigences relatives à la distribution et essai

Ta slovenski standard je istoveten z: **prEN 15597-2**

ICS:

43.160	Vozila za posebne namene	Special purpose vehicles

oSIST prEN 15597-2:2017 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 15597-2

February 2017

ICS 13.030.40

Will supersede CEN/TS 15597-2:2012

English Version

Winter maintenance equipment - Spreading machines (gritting machines) - Part 2: Requirements for distribution and their test

Équipement de viabilité hivernale - Épandeuses - Partie 2: Exigences relatives à la distribution et essai

Winterdienstausrüstung - Streumaschinen - Teil 2: Anforderungen an die Streustoffverteilung und deren Prüfung

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.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. prEN 15597-2:2017 E

Contents

Page

European foreword

This document (prEN 15597-2:2017) has been prepared by Technical Committee CEN/TC 337 “Road operation equipment and products”, the secretariat of which is held by AFNOR.

This document will supersede CEN/TS 15597-2:2012.

This document is currently submitted to the CEN enquiry.

Introduction

This document is meant to assess the demands made on mobile spreading machines operated in traffic. Spreading machines (spreaders/gritters) are meant to be operated in such way that homogeneous distribution of spreading media is given within the set spreading dosage, width and spreading pattern track.

The dynamic test procedure has the task to test functionality and accuracy of the spreader and the spreading pattern as much as possible under real conditions. So the test is made with real speed driving truck.

To ensure the repeatability of the results and to limit the expenditure the tests for the certification are made not with all possible spreading agents and all possible parameters of the operational area of the spreader. The salt for the test is limited to three defined test materials (see chapter 5), and the dynamic tests are made not with the highest possible driving speeds. This does not mean that the spreaders do not work with other materials or higher speeds. If the spreader shall operate with other materials and/or higher speed this is meant to be tested and adjusted individually by the customer. Especially by driving with higher speeds the influences of the driving turbulences and the truck configuration where the spreader is mounted on become very strong so that it makes no sense to test this for the certification independent of the special truck.

1 Scope

This European Standard gives the possibility to certify a model of vehicle-mounted or (trailer) dragged spreading machines for winter service with standard parameters, leaving the possibility to the manufacturer to evolve in performances. At the same time, information is given on the minimum content required for operating manuals.

This standard is valid for machines which are used to spread the following media:

— not pre-wetted thawing media (solid thawing media);

— pre-wetted thawing media;

— liquid thawing media.

The following points are not covered by this standard:

— requirements for registration and approval;

— requirements made by automobile manufacturers;

— requirements on safety – these are dealt with in EN 13021;

— requirements on EN 15518-3.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN 15431, *Winter and road service area maintenance equipments - Power system and related controls - Interchangeability and performance requirements*

EN 15597-1:2009, *Winter maintenance equipment — Spreading machines (gritting machines) — Part 1: General requirements and definitions for spreading machines*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15144 and the following apply.

3.1
machine model
machine model that includes a spreader of thawing media for road maintenance and its control box

3.2
spreader types
spreading machine with easy adjustment for various spreading agents under various spreading conditions

3.3
test materials
specific sodium-chloride (NaCl) substances for verification purposes of spreading capability

Note 1 to entry: See clause 5.

3.4
test
test realized with different spreading parameters (dosage, spreading width and vehicle speed), for a machine model, a test thawing media and a spreader type

3.5
qualification
qualification of a machine model that states the conformity to the requirements defined in this standard

Note 1 to entry: The check of the respect of these requirements is realized after a series of static and dynamic tests defined for a type of spreader and a test thawing media.

3.6
test report
document in which the whole conditions and test results for a qualification are recorded

3.7
technical certificate
technical certificate that is set for a qualified machine model

Note 1 to entry: If several qualifications of the same model are realized with different couples « test material / spreader type», the whole test results of the different qualifications will be reported on the same technical certificate.

3.8
measure point
measured data in the static test, which are calculated or set according to the frequency

3.9
test area
prepared section where specific conditions for dynamic test are required

Note 1 to entry: See Figure 4.

3.10
outer strip
part of the total collecting area, and two strips of 1 m width each side (left and right) out of the measurement area

3.11
measurement area
area, in the dynamic test, corresponding to the defined spreading length multiplied by the set theoretical spreading width

3.12
total collecting area strips
measurement area plus the two outer strips

3.13
spacing area
area between two total collecting area strips and has a length of 2,5 m., in this area the thawing material has not to be collected

3.14
in-driving area
area inside the test area, before the first total collecting area strips

3.15
out-driving area
area inside the test area, after the last total collecting area strips

3.16
effective average dosage
ratio of the total amount collected divided by the measurement area, in g/m²

3.17
theoretical dosage
value set on the control box in g/m²

3.18
theoretical total amount
theoretical dosage multiplied by the measurement area

3.19
total amount
complete mass collected on a total collecting area

3.20
effective dosage in a strip
total amount of test material collected in this strip, divided by the strip surface area

3.21
mathematic average dosage
average of the effective average dosage of the 2 best of three test runs in dynamic test

3.22
dosage percentage
relation between the effective dosage in a strip to the effective average dosage

4 Definition

The table reference for different types of spreader is shown in EN 15597-1:2009, 4.1.

5 Test materials

The materials used in Europe for winter maintenance are very different. The sodium chloride (NaCl) has different granulometry according to the mine or production type, the humidity of these products is very variable too. For this reason the test shall be done with one or more reference salts with the characteristic shown in the Tables 1 and 2.

Table 1 — Characteristics of the test material – Medium Salt

Moisture (weight %)	Dry (max. 0,6)	Semi-dry (max. 2,0)
Sieve analysis (Test sieve)	Weight % passing test sieve	
0,125 mm	2 - 6	
0,8 mm	6 - 24	
1,6 mm	26 - 60	
3,15 mm	80 - 90	
6,3 mm	100	

Table 2 — Characteristics of the test material – Extra fine salt

Moisture (weight %)	Wet (max. 3.5)
Sieve analysis (Test sieve)	Weight % passing test sieve
0,125 mm	< 5
0,8 mm	> 95
2,0 mm	100

The characteristics of the delivered test material shall be guaranteed and verified by the salt supplier. An official certificate of material delivered by material supplier shall be attached to the test report.

The de-icing material shall be stored protected from atmospheric moisture agent, in order to keep the original characteristic during storage period.

The concentration of sodium chloride in the brine for pre-wetting or liquid spraying shall be between 22 % and 23 % by weight. This analysis shall be done prior each test.

The measured results shall be corrected according to the real NaCl content in the spreading material.

Each machine can be tested with one or more salts and different humidity, as shown in Tables 1 and 2, in the certificate the type of salt used for test shall be reported.

6 Certification procedure

6.1 Principle of qualification procedure

The qualification procedure of the spreaders or sprayers includes two tests types, one static and one dynamic. The static test enables to check the right quantity, it is realized without moving the spreader. The dynamic test enables to check the quality of spreading and spraying pattern, it is realized driving the spreader vehicle during spreading operation on a test area.

According to the type of spreader tested, the qualification procedure sets the functioning parameters of the machine. These spreading parameters are different for the static and dynamic tests.

Each spreader type, in order to be qualified, shall meet the requirements of the two tests (static and dynamic).

During a qualification, it is only allowed to change the settings of spreading width, dosage, symmetry, simulated speed, pre-wet on/off. In case of changing other parameters the whole test procedure shall be restarted.

It is allowed to make pre-tests in order to be able to choose and test different settings. These tests will not be taken as qualification tests. The manufacturer shall declare clearly after the pre-tests that he wants to start with the qualification test procedure. Then only those test runs after this declaration will count for official qualification and the qualification test requirements become valid.

6.2 Identification and requirements on spreader types

A spreader type includes a spreader and a control box. The spreader and the control box shall be identified in the manufacturer's production (for instance: model number), and shall respect the actual European standards.

The modification of the components influencing the spreading performances defined in Annex A involves the definition of a new machine model, a new procedure of qualification shall be realized for this new model.

Table 3 —required test related to spreader types

Spreader type	Thawing media		
	Not pre-wetted thawing media	Pre-wetted thawing media	Liquid thawing media
For not pre-wetted thawing media	X		
For pre-wetted thawing media		X	
For pre-wetted and liquid thawing media		X	X
For liquid thawing media			X

The certificate will have one sentence reporting the test related to the spreader type passed.

For the same model, the manufacturer can do different qualifications with different "test material / spreader type".

6.3 Procedure of the static test

6.3.1 General

The static test consists to verify, with weighing, the precision and regularity of test material flow and right quantity. It is realized without moving the spreader, consequently vehicle speeds shall be simulated by its control box (EN 15597-1 standard).

- For the spreaders/sprayers having an auxiliary engine, the manufacturer's advices shall be respected;
- For the spreaders/sprayers driven by the vehicle hydraulics, the EN 15431 standard shall be applied (respect of the engine nominal speed);
- For the spreaders/sprayers driven by the pump mounted on wheel, an independent system will have to ensure the pump rotation at the speed needed by the test;

- For the spreaders/sprayers driven by the pump flanged on a vehicle wheel, an independent system will have to ensure the pump rotation needed by the test, applying a theoretical diameter of the vehicle tire of 1m.

For spreaders working with pre-wetted thawing media, the tests shall be done collecting the two media concurrently but in separate bins (disconnection of injection pipes of the brine). If the nozzle influence the flow, shall remain mounted on the pipe during the test.

For spreaders working with liquid, the test shall be done collecting liquid of the spraying devices (e.g. nozzles) related to the spraying width.

The requirements on the methods and equipment are described in 6.3.3.

6.3.2 Description of static qualification tests per spreader type

Tables 4 to 9 show the tests series which have to be realized for each spreader type with different spreading parameters in order to qualify a spreader type with a test material.

Table 4 — Spreading parameters A type for not pre-wetted or pre-wetted thawing media

No.	Dosage	Spreading width	Spreading speed	Theoretical delivery
	(g/m²)	(m.)	(km/h)	(kg/min)
1	5	6	20	10
2	10	6	40	40
3	30	6	40	120

Table 5 — Spreading parameters B type for not pre-wetted or pre-wetted thawing media

No.	Dosage	Spreading width	Spreading speed	Theoretical delivery
	(g/m²)	(m.)	(km/h)	(kg/min)
1	10	6	10	10
2	10	8	60	80
3	30	8	60	240

Table 6 — Spreading parameters C type for not pre-wetted or pre-wetted thawing media

No.	Dosage	Spreading width	Spreading speed	Theoretical delivery	
	(g/m²)	(m.)	(km/h)	(kg/min)	
1	10	6	10	10	
2	30	6	30	90	
3	30	12	50	300	Only pre-wetted