



SLOVENSKI STANDARD

oSIST prEN 12350-11:2008

01-januar-2008

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Testing fresh concrete - Part 11: Self-compacting concrete - Sieve segregation test

Prüfung von Frischbeton - Teil 11: Selbstverdichtender Beton - Bestimmung der
Sedimentationsstabilität im Siebversuch

Essai pour béton frais - Partie 11 : Béton auto-plaçant - Essai de stabilité au tamis

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ICS:

91.100.30

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English Version

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Essai pour béton frais - Partie 11 : Béton auto-plaçant -
Essai de stabilité au tamis

Prüfung von Frischbeton - Teil 11: Selbstverdichtender
Beton - Bestimmung der Sedimentationsstabilität im
Siebversuch

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 104.

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 Management Centre has the same status as the official versions.

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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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Foreword

This document (prEN 12350-11:2007) has been prepared by Technical Committee CEN/TC 104 “Concrete and related products”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This standard is based on the results from the EU-project “Testing-SCC” under the 5th Frame Programme (GRD2-2000-30024/G6RD-CT-2001-00580).

Owing to its significant advantages in the improvement of construction quality and working environment, self-compacting concrete (SCC) has been more widely accepted by the construction owners. The use of SCC in practical concrete construction is stably increasing. Since SCC has to give satisfactory in-situ properties (perfect filling of the mould and embedment of the reinforcement, homogeneity and full compaction) without vibration, the proper methods for testing the workability of fresh SCC are very important. The workability of fresh SCC should basically include three key properties: filling ability, passing ability and resistance to segregation. It is desirable, especially in the case of new constituents or new concrete compositions, to test the workability of fresh SCC before casting in place.

A number of test methods are available for testing fresh SCC. Most of the commonly used test methods were evaluated in the recently closed EU-project “Testing-SCC” under the 5th Frame Programme (GRD2-2000-30024/G6RD-CT-2001-00580). According to the results from this EU project, it seems no single test method can completely cover all the three key properties. Nevertheless any test method should at least be correlated to the practical situation and give consistent results in order to provide reliable data for judgment of concrete workability.

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This standard is one of a series concerned with testing fresh concrete.

This series EN 12350 includes the following parts:

EN 12350 Testing fresh concrete

- *Part 1: Sampling;*
- *Part 2: Slump test;*
- *Part 3: Vebe test;*
- *Part 4: Degree of compactability;*
- *Part 5: Flow table test;*
- *Part 6: Density;*
- *Part 7: Air content — Pressure methods;*
- *Part 8: Self compacting concrete - Slump-flow test;*
- *Part 9: Self compacting concrete - V-funnel test;*
- *Part 10: Self compacting concrete - L-box test;*
- *Part 11: Self compacting concrete - Sieve segregation test;*
- *Part 12: Self compacting concrete - J-ring test.*

Caution When cement is mixed with water, alkali is released. Take precautions to avoid dry cement entering the eyes, mouth and nose whilst mixing concrete. Prevent skin contact with wet cement or concrete by wearing suitable protective clothing. If cement or concrete enters the eye, immediately wash it out thoroughly with clean water and seek medical treatment without delay. Wash wet concrete off the skin immediately.

1 Scope

This document specifies the procedure for determining the sieve segregation resistance of self-compacting concrete.

NOTE: This test is not applicable to concrete containing fibres or lightweight aggregate.

2 Normative references

The following referenced documents are indispensable for the application 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.

This document incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this document only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to (including any amendments) applies.

EN 12350-1, *Testing fresh concrete — Part 1: Sampling*

ISO 3310-2, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal*

ISO 5725, *Precision of test methods — Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests.*

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3 Principle

The sieve segregation resistance test is used to assess the resistance of self-compacting concrete to segregation.

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After sampling, the fresh concrete is allowed to stand for 15 min and any separation of bleed water is noted. A defined top part of the sample is then poured onto a sieve with 5 mm square apertures. After 2 min the weight of material which has passed through the sieve is recorded. The segregation ratio is then calculated as the proportion of the sample and the material passing through the sieve.

4 Apparatus

4.1 Perforated plate sieve

having 5 mm square apertures, frame diameter not less than 300 mm and a height of at least 30 mm, conforming to ISO 3310-2, complete with a receiver from which the sieve can easily removed by lifting vertically.

4.2 Balance

having a flat platform which can accommodate the sieve receiver and having a capacity of at least 10 kg, with accuracy better than 20 g

4.3 Sample container

a rigid container made from a non absorbent material and having a minimum internal diameter of 200mm and a capacity of at least 11 l

4.4 Timer

capable of measuring to 1 s

4.5 Thermometer

capable of measuring to 1 °C

5 Test sample

A sample which fills the sample container shall be obtained in accordance with EN 12350-1.

6 Procedure

Take and record the temperature of the concrete using the thermometer in °C.

Place $(10 \pm 0,5)$ l of concrete in the sample container and cover to prevent evaporation (see figure 1).

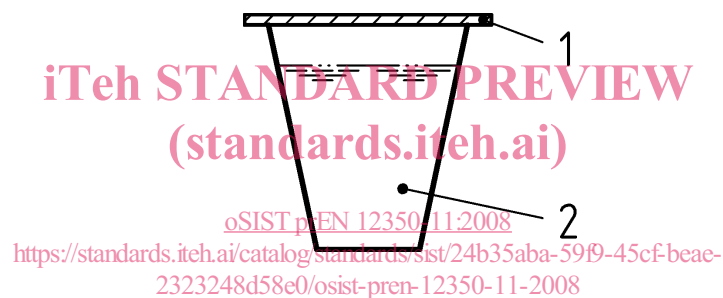


Figure 1 — Sample container and cover

Allow to stand in a level position, without disturbance, for $(15 \pm 0,5)$ min.

Ensure the balance is level and free from vibration. Place the sieve receiver on the balance and record its mass, m_p in g. Then place the dry sieve on the receiver and again record the mass or zero the balance.

At the end of the standing period remove the cover from the sample container and record whether any bleed water has appeared on the surface of the concrete.

With the sieve and receiver still on the balance, and with the top of the sample container (500 ± 50) mm above the sieve, steadily and carefully pour $(4,8 \pm 0,2)$ kg of concrete (including any bleed water) onto the centre of the sieve (see figure 2). Record the actual mass of concrete m_c in g on the sieve.