



SLOVENSKI STANDARD
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Nadomešča:
SIST EN 16659:2016

Bitumen in bitumenska veziva - Ponavljajoči obremenilni in razbremenilni preskus lezenja (MSCRT)

Bitumen and bituminous binders - Multiple Stress Creep and Recovery Test (MSCRT)

Bitumen und bitumenhaltige Bindemittel - MSCR-Prüfung (Multiple Stress Creep and Recovery Test)

Bitumes et liants bitumineux- Essai de fluage-recouvrance sous contraintes répétées (essai MSCR)

Ta slovenski standard je istoveten z: prEN 16659

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ICS:

75.140	Voski, bitumni in drugi naftni proizvodi	Waxes, bituminous materials and other petroleum products
91.100.50	Veziva. Tesnilni materiali	Binders. Sealing materials

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en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 16659

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ICS 75.140; 91.100.50

Will supersede EN 16659:2015

English Version

Bitumen and bituminous binders - Multiple Stress Creep and Recovery Test (MSCRT)

Bitumes et liants bitumineux- Essai de fluage-
recouvrance sous contraintes répétées (essai MSCR)

Bitumen und bitumenhaltige Bindemittel - MSCR-
Prüfung (Multiple Stress Creep and Recovery Test)

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 336.

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.

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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 COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 16659:2024) has been prepared by Technical Committee CEN/TC 336 “Bitumens and bituminous binders”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16659:2015.

prEN 16659:2024 includes the following significant technical changes with respect to EN 16659:2015:

- a) sub-section numbering removed and restriction of particle size added in the scope;
- b) reference to EN 58 removed;
- c) reworded “load” into “stress” in 3.1;
- d) wording of shear strain and shear stress aligned;
- e) definition of shear strain including explanatory Note added in 3.4;
- f) shear strain expressed in per cent instead of absolute values; symbol of shear strain changed from ε to γ ;
- g) testing temperature range adjusted to [40 to 90] °C;
- h) minimum range of rheometer control temperature adjusted to [40 to 90] °C in 5.1;
- i) dimensions of silicone mould added in 5.2;
- j) 6.4 “Zero gap setting” revised and aligned with EN 14770;
- k) heating procedure in 7.1 simplified with reference to EN 12594;
- l) 7.2 “Specimen manufacturing and storage conditions” revised and aligned with EN 14770; sentence recommending to use a mixer for PMB removed in 7.2;
- m) 8.1 “Specimen placing into the rheometer” and 8.2 “Gap setting” revised and aligned with EN 14770;
- n) information on test temperatures added in the Note of 8.3.1;
- o) torque values added in Note 2 of 8.3.2 and Note 2 of 8.3.4;
- p) information on more stress levels added in the Note 2 of 8.3.3;
- q) 8.3.4 added to allow subsequent testing at several test temperatures;
- r) Figure 1 and Figure 2 revised for clarification;
- s) Clause 10 revised and complemented with new precision data;
- t) Clause 11 revised for comprehensiveness.

prEN 16659:2024 (E)**1 Scope**

This document specifies a test method for the determination of per cent recovery and non-recoverable creep compliance of bitumen and bituminous binders by means of Multiple Stress Creep and Recovery (MSCR) testing. The MSCR test is conducted using the Dynamic Shear Rheometer (DSR) in creep mode at a specified temperature.

The per cent recovery at multiple stress levels is intended to determine the presence of elastic response and stress dependence of bituminous binders. The non-recoverable creep compliance at multiple stress levels is intended as an indicator for the sensitivity to permanent deformation and stress dependence of bituminous binders.

This document is applicable to un-aged, aged, stabilized and recovered bituminous binders. The test procedure in accordance with this document is not applicable for bituminous binders with particles larger than 250 µm (e.g. filler material, granulated rubber).

WARNING — The use of this document can involve hazardous materials, operations and equipment. This document does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

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 12594, *Bitumen and bituminous binders — Preparation of test samples*

EN 14770, *Bitumen and bituminous binders — Determination of complex shear modulus and phase angle — Dynamic Shear Rheometer (DSR)*

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:

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

3.1 creep and recovery

standard rheological test protocol whereby a specimen is subjected to a constant stress for a fixed time period, then allowed to recover, at zero stress, for a fixed time period

3.2 per cent recovery

recovered shear strain in a specimen during the recovery portion of a cycle, expressed in per cent

Note 1 to entry: The per cent recovery is designed by “%R”.