



BSI Standards Publication

Derivatives from coal pyrolysis — Coal tar based oils: creosotes — Specifications and test methods

National foreword

This British Standard is the UK implementation of EN 13991:2024. It supersedes BS EN 13991:2003, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee W/-, Consumer Products and Services Sector Policy and Strategy Committee.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

Derivatives from coal pyrolysis - Coal tar based oils: creosotes - Specifications and test methods

Produits dérivés de la pyrolyse du charbon - Huiles de
goudron de houille: créosotes - Spécifications et
méthodes d'essai

Derivate der Kohlenpyrolyse - Öle aus Steinkohlenteer:
Kreosot - Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 3 June 2024.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN 13991:2024) has been prepared by Technical Committee CEN/TC 317 “Derivatives from coal pyrolysis”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2025, and conflicting national standards shall be withdrawn at the latest by January 2025.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13991:2003.

EN 13991:2024 includes the following significant technical changes with respect to EN 13991:2003:

- a revision is required due to legal changes to the marketing of Creosote in Europe. According to Regulation 1907/2006/EC (Annex XVII, Entry 31, Restrictions), only Creosote Grades with a benzo[a]pyrene content below 50 mg/kg are allowed to be placed on the EU market. This means that former Creosote Grade A with a benzo[a]pyrene content up to 500 mg/kg is no longer allowed and has therefore been deleted from the standard;
- additional restrictions by Commission Implementing Regulation (EU) 2022/1950 related to use and storage have been taken into account;
- test methods originating from BS 144 have been integrated as informative Annex D due to withdrawal of BS 144;
- normative references and bibliography have been updated.

Annexes A and B are normative. Annexes C and D are informative.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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1 Scope

This document specifies the requirements and the test methods for creosotes for industrial wood preservation.

Different grades of creosote are used depending on the desired properties of the treated wood.

WARNING — The use of this document can involve hazardous materials, operations and equipment. This document cannot address all of the safety implications associated with its use. It is the responsibility of the user of this document to establish appropriate health and safety practices and assess the applicability of regulatory limitations prior to use. The warnings to use are covered in Annex C.

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 1014-1, *Wood preservatives — Creosote and creosoted timber — Methods of sampling and analysis — Part 1: Procedure for sampling creosote*

EN 1014-3, *Wood preservatives — Creosote and creosoted timber — Methods of sampling and analysis — Part 3: Determination of the benzo[a]pyrene content of creosote*

EN 1014-4, *Wood preservatives — Creosote and creosoted timber — Methods of sampling and analysis — Part 4: Determination of the water-extractable phenols content of creosote*

EN 15529, *Derivatives from coal pyrolysis - Terminology*

EN ISO 2719, *Determination of flash point - Pensky-Martens closed cup method (ISO 2719)*

ISO 760, *Determination of water — Karl Fischer method (General method)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15529 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/>

4 Sampling

Samples for the assessment of the parameters listed in Table 1 shall be taken in accordance with EN 1014-1.

5 Specifications and test methods

Specifications for Creosote Grade B and C and the relevant test methods are given in Table 1.

Creosote is intended to protect wooden railway sleepers, utility poles (overhead power and telecommunication lines) and wood for other uses permitted in the receiving country.

Creosote in use should not contain more than 3 % of water.

Table 1 — Specifications for Creosote Grade B and C

Parameters	Grade B	Grade C	Test method
Density (kg/m ³) at 20 °C ^a	1 020 to 1 150	1 030 to 1 170	see Annex D of this document based on BS 144:1997, Annex B
Water content (m/m) %	max. 1	max. 1	shall be according to ISO 760 ^b
Crystallization temperature (°C)	max. 23	max. 50	shall be according to Annex A
Water-extractable phenols (m/m) %	max. 3	max. 3	shall be according to EN 1014-4
Insoluble matter in toluene (m/m) %	max. 0,4	max. 0,4	see Annex D of this document based on BS 144:1997, Annex G
Boiling range (volume) %			shall be according to Annex B
Distillate to 235 °C	max. 20	—	
Distillate to 300 °C	40 to 60	max. 10	
Distillate to 355 °C	min.70	min. 65	
Benzo[a]pyrene content (mg/kg)	max. 50	max. 50	shall be according to EN 1014-3
Flash point (°C)	min. 61	min. 61	shall be according to EN ISO 2719
NOTE According to Regulation 1907/2006/EC (Annex XVII, Entry 31, Restrictions) only creosote with a benzo[a]pyrene content lower than 50 mg/kg may be marketed in Europe. This means that former grade A quality with a benzo[a]pyrene content of max. 500 mg/kg is no longer allowed to stay on the market. Grade A was therefore deleted. ^a The density is determined at a temperature above the crystallization temperature. For each degree Celsius above 20 °C, a fixed value of 0,7 kg/m³ is added to the density reading. ^b As an alternative, the distillation method of ISO 3733 can be used.			

Annex A (normative)

Determination of the crystallization temperature of coal tar oil

A.1 General

This method describes the procedure for the determination of the crystallization temperature of coal tar oil and is applicable to creosote, carbon black feedstock, fluxing oils and other coal tar based oils.

A.2 Sampling

Sampling shall follow the procedures described in EN 1014-1.

A.3 Apparatus: an example of the apparatus is given in Figure A.1

A.3.1 Porcelain dish, top diameter (105 ± 5) mm, height (60 ± 5) mm, capacity ca. 300 ml.

A.3.2 Porcelain dish, flat shape, diameter (250 ± 10) mm, capacity ca. 2 000 ml.

A.3.3 Electric heating plate, 500 W to 1 000 W.

A.3.4 Thermometer, 0 °C to 100 °C, graduated in 0,5 °C as described in ISO 386.

A.3.5 Metal support ring.

A.4 Procedure

Heat the sample until completely free of crystals. The temperature shall be at least 10 °C above the specified maximum crystallization temperature.

Pour (150 ± 5) ml of the so prepared oil into the small porcelain dish.

Place the dish with oil on the support ring in the larger dish and fill the latter with water at a temperature about 10 °C lower than the specified maximum crystallization temperature.

The water surface shall be (10 ± 2) mm above the oil surface in the smaller dish.

Stir the oil gently with the thermometer, the oil shall be crystal free at the temperature indicated in Table 1.

If it is required to know the crystallization temperature, repeat the determination with water at a lower temperature. Use some ice when necessary.

The temperature at which crystal formation starts is the crystallization temperature.

A.5 Test report

The test report shall at least include the following:

- type of tar oil;
- references of sample;