
British Standard

Bitumens for building and civil engineering

Part 3. Specification for mixtures of bitumen with pitch, tar and Trinidad lake asphalt

Bitumes pour la construction et le génie civil (travaux publics)
Partie 3. Mélanges bitume-brai-goudron et asphalte du Lac Trinidad

Bitumen für das Bauwesen
Teil 3. Bitumenmischungen mit Pech, Teer und Trinidad-See-Asphalt



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Foreword

This Part of this British Standard has been prepared under the direction of the Road Engineering Standards Policy Committee.

It is a partial revision of BS 3690 : Part 3 : 1983 which is now withdrawn. All types of bitumen for building and civil engineering are covered in BS 3690 as follows.

- BS 3690 Bitumens for building and civil engineering
 - Part 1. Specification for bitumens for roads and other paved areas
 - Part 2. Specification for bitumens for industrial purposes
 - Part 3. Specification for mixtures of bitumen with pitch, tar and Trinidad lake asphalt

Part 3 is based on normal practice in the UK and relates only to the climate, conditions and application techniques encountered here. It specifies the properties known to be important and the relevant test methods. Many combinations of bitumen with tar, pitch or refined lake asphalt are possible but the coverage of this standard has been limited to the more commonly available mixtures that are used as binders for roadways and footways. A limited number of lake asphalt-bitumen mixtures are described. This type of mixture is used in building mastics and the range specified in this standard will be extended if experience shows this is desirable.

A system of grades and nomenclature has been adopted based on the mid-point of the permissible penetration or viscosity range as appropriate. It is considered that this makes specifying and ordering easier.

This edition introduces technical changes to bring the standard up-to-date but it does not reflect a full review of the standard, which will be undertaken in due course. The

main changes from the previous edition are clarification of the title to exclude polymer blends which will be covered separately and the updating of definitions and test method references.

It is not the function of this standard to specify which of the bitumen mixtures should be used for individual applications. Appropriate British Standards are BS 594, BS 1446, BS 1447 and BS 4987.

Other useful publications are:

- Road Note 39 Recommendations for road surface dressing (Transport and Road Research Laboratory, Department of the Environment and Department of Transport);
- Specification for Highway works (Department of Transport).

This Part of this British Standard requires the use of substances and procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Acknowledgement is made to the Standardization of Tar Products Test Committee (STPTC) for permission to use STPTC PT3-79 which appears in appendix C.

It is intended to produce a Part 4 to BS 3690 which will be a specification for modified bitumens including their testing.

Compliance with a British Standard does not of itself confer immunity from legal obligations. In particular, attention is drawn to the Health and Safety at work, etc. Act 1974.

British Standard

Bitumens for building and civil engineering

Part 3. Specification for bitumen mixtures

1. Scope

This Part of this standard specifies classification, composition and properties of pitch-bitumen mixtures, tar-bitumen mixtures and lake asphalt-bitumen mixtures that are suitable for use in road and industrial applications in the UK.

Each mixture is classified into a number of grades for each of which the appropriate designation and properties are specified.

Advice on handling and packaging, and on sampling and testing is given in appendices A and B.

NOTE. The titles of the publications referred to in this standard are listed on the inside back cover.

2. Definitions

For the purposes of this Part of this standard, the following definitions apply.

2.1 bitumen. A viscous liquid, or a solid, consisting essentially of hydrocarbons and their derivatives, which is soluble in trichloroethylene and is substantially non-volatile and softens gradually when heated. It is black or brown in colour and possesses waterproofing and adhesive properties. It is obtained by refinery processes from petroleum, and is also found as a natural deposit or as a component of naturally occurring asphalt, in which it is associated with mineral matter.

2.2 pitch. The black or dark brown solid or semi-solid residue remaining after the partial evaporation or fractional distillation of crude tars produced wholly or substantially as a by-product in the carbonization of coal at temperatures exceeding 600 °C (see also 2.3).

2.3 refined tar. Road tar as defined in BS 76.

2.4 pitch-bitumen mixture. A binder consisting of a homogeneous mixture containing specified proportions by mass of penetration grade bitumen and pitch.

2.5 tar-bitumen mixture. A binder consisting of a homogeneous mixture containing specified proportions by mass of penetration grade bitumen and refined tar.

2.6 refined lake asphalt. A naturally occurring mixture of bitumen and finely divided mineral matter which is found in well-defined surface deposits and from which unwanted components such as water and vegetable matter have been removed.

2.7 lake asphalt-bitumen mixture. A homogeneous mixture of refined Trinidad lake asphalt and bitumen, with

or without the addition of flux oil, used in the manufacture of asphalts and other coated materials.

3. Classification

The mixtures specified in this Part of this standard shall be designated by numbers representing the mid-point of the penetration or viscosity range as appropriate. Pitch-bitumen mixtures, penetration grade tar-bitumen mixtures and lake asphalt-bitumen mixtures shall have the suffix 'pen' whereas lower viscosity tar-bitumen mixtures shall have the suffix 'secs'.

4. Pitch-bitumen mixtures

Pitch-bitumen mixtures shall be homogeneous mixtures containing 20 % to 25 % by mass of pitch with the remainder being penetration grade bitumen complying with BS 3690 : Part 1. The bitumen shall have a penetration value not greater than 150, and the softening point of the pitch when determined in accordance with appendix C shall be between 55 °C and 80 °C.

The mixtures shall comply with the requirements given for the appropriate grade in table 1 when tested by the methods shown in that table.

5. Tar-bitumen mixtures

5.1 Tar-bitumen mixtures for surface dressing

5.1.1 Composition. Tar-bitumen mixtures for surface dressing shall be homogeneous mixtures containing 30 % to 55 % by mass of refined tar, with the remainder being penetration grade bitumen complying with BS 3690 : Part 1. The refined tar component of the mixtures shall contain not less than 25 % by mass of pitch with a softening point of 80 °C when determined in accordance with appendix C, or a correspondingly greater amount of pitch with a softening point below 80 °C or lesser amounts of pitch with a softening point above 80 °C.

The mixtures shall comply with the requirements given for the appropriate grade in table 2 when tested by the methods shown in that table.

5.1.2 Storage stability. The mixtures shall transform completely, without stirring, into a mobile, uniform liquid with no separation of solid matter when heated to a temperature of 140 °C. After cooling, the mixtures shall have a uniform appearance and no visible layer of oil shall form on the surface after it has remained without agitation for 24 h at 15 °C to 20 °C in a sealed container.