BS 1924-2:2018

BSI Standards Publication

Hydraulically bound and stabilized materials for civil engineering purposes

Part 2: Sample preparation and testing of materials during and after treatment

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Summary of pages
This document comprises a front cover, and inside front cover, pages i to iv, pages 1 to 59, an inside back cover and a back cover.

Foreword

Publishing information

This part of BS 1924 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 March 2018. It was prepared by Subcommittee B/510/4, *Cementitious bound materials, unbound granular materials, waste materials and marginal materials*, under the authority of Technical Committee B/510, *Road materials*. A list of organizations represented on these committees can be obtained on request to their secretary.

Supersession

This part of BS 1924 supersedes BS 1924-2:1990, which is withdrawn.

Relationship with other publications

The tests for materials in the treated condition are given in BS 1924-2, either by reference to other British Standards or in full.

The tests for materials in the untreated condition are given in BS 1924-1, either by reference to other British Standards or in full.

Information about this document

BS 1924 provides tests for soil and/or aggregate treatment employing solely or in combination: cement, granulated blast furnace slag (gbs), ground granulated blast furnace slag (ggbs), (coal) fly ash and/or lime. Gbs and ggbs are hydraulic materials that require activation by the addition of lime and/or sulfate or products that contain these compounds. Coal fly ash exists in two forms: calcareous fly ash and siliceous fly ash. The former is hydraulic or cementitious, in its own right; the latter is pozzolanic and needs activation by lime or cement.

BS 1924 contains the full range of tests required before and after treatment, whether improvement, modification or stabilization. This standard is also suitable for the testing of hydraulically bound granular mixtures detailed in BS EN 14227-1 to BS EN 14227-5, and hydraulically stabilized soils in BS EN 14227-15.

This is a full revision of the standard, and introduces the following principal changes:

- removal or replacement of withdrawn or superseded British Standards;
- introduction of new terminology, including treated material, untreated material and treating agents;
- inclusion of additional test methods, including the light weight deflectometer for determination of surface modulus, falling weight deflectometer for determination of surface modulus and the laboratory test method for the determination of coefficient of linear thermal expansion of hardened specimens;
- inclusion of test methods introduced with BS EN 14227 in 2004, including the determination of the modulus of elasticity of hydraulically bound mixtures;
- change of title to reflect the wider scope of this revision, which is intended to cover, in addition to cement and lime, the use of other treating agents.

This revision includes all the tests, with minor exceptions, for materials treated with cement and lime that were included in the 1990 edition.

Lime, and to a lesser extent other treating agents, can also be used to improve rather than to stabilize a material. "Improvement" refers to measures taken to improve the handling and compactability of a soil rather than its structural properties and durability characteristics. This can mean that the material retains many of the properties of soil. The process can be used, for example, to render an unsuitable material suitable for use by reducing moisture content or modifying the plasticity characteristics. The tests in this standard are applicable for the determination of such changes in material properties. With cohesive soils and materials such as shales and mudstones, improvement includes property changes termed "modification", which involves a reduction in plasticity and thus an improvement to the soil/material. Modification only occurs within clays, including the clay fractions of mixed materials.

Use of this document

It has been assumed in the drafting of this part of BS 1924 that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its methods are expressed as a set of instructions, a description, or in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. "organization" rather than "organisation").

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This part of BS 1924 describes methods of testing materials treated solely or in combination with treating agents, including cement, granulated blast furnace slag (gbs), ground granulated blast furnace slag (ggbs), (coal) fly ash and lime.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions 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.

ASTM D6938-17, *Standard test methods for in-place density and water content of soil and soil-aggregate by nuclear methods (shallow depth)*

BS 812-109, *Testing aggregates — Part 109: Methods for determination of moisture content*

BS 812-124, *Testing aggregates — Part 124: Method for determination of frost heave*

BS 1377-2, *Methods of test for soils for civil engineering purposes — Part 2: Classification tests*

BS 1377-7, *Methods of test for soils for civil engineering purposes — Part 7: Shear strength tests (total stress)*

BS 1924-1, *Hydraulically-bound and treated materials for civil engineering purposes — Part 1: Sampling, sample preparation and testing of materials before treatment*

BS EN 13286-1, *Unbound and hydraulically bound mixtures — Part 1: Test methods for laboratory reference density and water content — Introduction, general requirements and sampling*

BS EN 13286-2, *Unbound and hydraulically bound mixtures — Part 2: Test methods for the determination of the laboratory reference density and water content — Proctor compaction*

BS EN 13286-3, *Unbound and hydraulically bound mixtures — Part 3: Test methods for laboratory reference density and water content — Vibrocompression with controlled parameters*

BS EN 13286-4, *Unbound and hydraulically bound mixtures — Part 4: Test methods for laboratory reference density and water content — Vibrating hammer*

BS EN 13286-5, *Unbound and hydraulically bound mixtures — Part 5: Test methods for laboratory reference density and water content — Vibrating table*

BS EN 13286-40, *Unbound and hydraulically bound mixtures — Part 40: Test method for determination of the direct tensile strength of hydraulically bound mixtures*

BS EN 13286-41, *Unbound and hydraulically bound mixtures — Part 41: Test method for determination of the compressive strength of hydraulically bound mixtures*

BS EN 13286-42, *Unbound and hydraulically bound mixtures — Part 42: Test method for the determination of the indirect tensile strength of hydraulically bound mixtures*

BS EN 13286-43, *Unbound and hydraulically bound mixtures — Part 43: Test method for the determination of the modulus of elasticity of hydraulically bound mixtures*

BS EN 13286-45, *Unbound and hydraulically bound mixtures — Part 45: Test method for the determination of the workability period of hydraulically bound mixtures*

BS EN 13286-46, *Unbound and hydraulically bound mixtures — Part 46: Test method for the determination of the moisture condition value*

