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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 25993-2023

Permeable paving bricks and permeable paving flags

透水路面砖和透水路面板

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Foreword

This document was issued on 27 November 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 June 2024.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

1 Scope

GB/T 25993-2023 covers the paving units that let rainwater pass through the surface instead of shedding it towards a drain - the split between permeable paving bricks and permeable paving flags, the categories, grades and markings by which a unit is identified, and the general requirements on raw materials, cement among them, that go into making one. The technical requirements run from dimension deviation and appearance through strength, permeability coefficient and frost resistance, each with a matching test method, and three normative appendices carry the procedures the body of the document leaves out: flexural strength of flags, splitting tensile strength of bricks, and the permeability coefficient itself. Inspection rules set the ex-factory checks on dimension deviation, appearance quality and strength, and a closing clause deals with product certification, stacking and transportation. These measures exist because a permeable pavement can fail in two

opposite directions. With too little open porosity the water sheets off and the pavement drains no better than a sealed one; with too much, the unit loses the strength to carry wheel loads and comes apart once water trapped in the pores freezes, which is why frost resistance is judged after freeze-thaw cycling rather than on new units. Of use to paving unit manufacturers, testing laboratories, municipal designers and contractors laying permeable surfacing.

This document specifies the product categories, grades, markings, general requirements, technical requirements, test methods, inspection rules, product certification, stacking and transportation of permeable paving bricks and permeable paving flags.

This document applies to the design, production, testing and application of permeable pavement products for use in municipal sidewalks, landscape paths, non-heavy-loaded pavement plazas and other places.

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 version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB 175, Common Portland Cements

GB/T 1596, Fly ash used for cement and concrete

GB/T 2015, White Portland cement

GB/T 4111, Test Methods for the concrete block & brick

GB 6566, Limits of radionuclides in building materials

GB 8076, Concrete admixtures

GB/T 12988, Test method for abrasion resistance of inorganic paving materials

GB/T 14684, Sand for construction

GB/T 14685, Pebble and crushed stone for construction

GB/T 17431.1, Lightweight aggregates and its test methods - Part 1. Lightweight aggregates

GB/T 18046, Ground granulated blast furnace slag used for cement, mortar and concrete

GB/T 20472, Sulphoaluminate cement

3.4

slip resistance

The ability to resist relative displacement between pedestrian soles and the surface of permeable paving bricks and permeable paving flags.

4 Product categories, grades, and markings

4.1 Categories

4.1.1 According to the different formats of permeable paving bricks and permeable paving flags, they are divided into two categories. permeable paving bricks (code. PB) and permeable paving flags (code. PF).

4.1.2 According to the shapes of permeable paving bricks and permeable paving flags, they are divided into interlocking type (code. S) and ordinary type (code. N).

4.2 Grades

4.2.1 Strength grade

4.2.1.1 According to the splitting tensile strength, it is divided into 4 strength grades. fts3.0, fts3.5, fts4.0 and fts4.5.

4.2.1.2 According to the flexural strength, it is divided into 6 strength grades. Rf3.0, Rf3.5, Rf4.0, Rf4.5, Rf5.5 and Rf6.5.

4.2.2 Water permeability grade

According to the permeability coefficient, it is divided into Grade A and Grade B.

4.3 Marking

4.3.1 In product marking, two to three-digit letters or Arabic numerals may be used to replace Chinese characters which are used to express the geometric shape and surface decorative effects of the product.

4.3.2 The product marking of permeable paving bricks shall be written in the order of category, permeability grade, format (LxWxD), strength grade and standard number.

Example. Interlocking permeable paving brick of format 200 mm x 100 mm x 60 mm, splitting tensile strength fts3.5, and permeability coefficient grade A, is marked as. PB-

A 200x100x60 S fts3.5 GB/T 25993-2023.

4.3.3 The product marking of permeable paving flags shall be written in the order of category, permeability grade, format (LxWxD), strength grade and standard number.

Example. Interlocking permeable paving flags of format 600 mm x 300 mm x 60 mm, flexural strength Rf3.5, and water permeability coefficient grade A, is marked as. PF-A 600 x 300 x 60 S Rf3.5 GB/T 25993-2023.

5 General requirements

5.1 Raw materials

5.1.1 Cement shall comply with the requirements of GB 175, GB/T 2015, GB/T 20472, JC/T 870 and JC/T 933.

5.1.2 Fine aggregate shall comply with the requirements of GB/T 14684.

5.1.3 Pebble and crushed stone shall comply with the provisions of GB/T 14685. Heavy slag shall comply with the provisions of YB/T 4178.

5.1.4 The natural or artificial color aggregates used shall be tested and verified before use to prove that the product performance complies with the provisions of relevant standards. The added color aggregates shall not have an adverse effect on the durability of the product; the quality of other materials shall meet the requirements of relevant standards. Raw materials without a standard shall be inspected before use, and can only be used if the product performance meets the requirements of this document.

5.1.5 Fly ash shall comply with the provisions of GB/T 1596; ground slag powder shall comply with the provisions of GB/T 18046. Lightweight aggregate shall comply with the provisions of GB/T 17431.1.

5.1.6 Pigments shall comply with the requirements of JC/T 539.

5.1.7 Admixtures shall comply with the requirements of GB 8076 or JC/T 474.

5.1.8 Water shall comply with the requirements of JGJ 63.

5.1.9 The radioactivity of raw materials shall comply with the requirements of GB 6566.

5.2 Format

The format of permeable paving bricks and permeable paving flags shall be determined