

Screeds, bases and in situ floorings —

Part 4: Cementitious terrazzo wearing surfaces — Code of practice

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Committees responsible for this British Standard

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Association of Concrete Industrial Flooring Contractors
Association of Lightweight Aggregate Manufacturers
British Cement Association
Concrete Society
Contract Flooring Association
Federation of Plastering and Drywall Contractors
Federation of Resin Flooring Formulators and Applicators
Mastic Asphalt Council
Mortar Producers Association Limited
National Federation of Terrazzo-Marble and Mosaic Specialists
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Foreword

This part of BS 8204 has been prepared by Subcommittee B/507/6. BS 8204-4:2004+A1:2011 supersedes BS 8204-4:2004, which is withdrawn.

The start and finish of text introduced or altered by Amendment No. 1 is indicated in the text by tags **A1** and **A1**. Minor editorial changes are not tagged.

Amendment A1 introduces the following principal change.

- Insertion of Annex B on determination of slip resistance of pedestrian surfaces by the ramp/trolley method, alternatively known as the roller coaster method.

Terrazzo flooring can provide a hard, durable surface which is easy to clean. The term “sand” is used throughout this document as this is the common terminology in the UK screeding industry although recent European Standards use the term “fine aggregate”.

The other parts of BS 8204 are the following:

- Part 1:2003, *Concrete bases and cement sand levelling screeds to receive floorings — Code of practice*;
- Part 2:2003, *Concrete wearing surfaces — Code of practice*;
- Part 3:2004, *Polymer modified cementitious levelling screeds and wearing screeds — Code of practice*;
- Part 5:2004, *Mastic asphalt underlays and wearing surfaces — Code of practice*;
- Part 6:2001, *Synthetic resin floorings — Code of practice*;
- Part 7:2003, *Pumpable self smoothing screeds — Code of practice*.

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

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.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 20, an inside back cover and a back cover.

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1 Scope

This part of BS 8204 gives recommendations for the materials, design, work on site, inspection and testing, and cleaning and maintenance for in situ cementitious terrazzo flooring. It is intended for terrazzo contractors, specifiers, builders, designers and main contractors. It gives recommendations for in situ terrazzo flooring applied as a wearing surface on a concrete base or screed.

NOTE This part of BS 8204 is intended to be read in conjunction with BS 8204-1.

2 Normative references

The following referenced documents are indispensable for the application 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.

BS 1521:1972, *Specification for waterproof building papers*

BS 4483:1998, *Steel fabric for the reinforcement of concrete*.

BS 6100-1, *Glossary of building and civil engineering terms — Part 1: General and miscellaneous*.

BS 6100-6, *Glossary of building and civil engineering terms — Part 6: Concrete and plaster*.

BS 7976-2, *Pendulum testers — Part 2: Method of operation*.

BS 8204-1, *Screeds, bases and in situ floorings — Part 1: Concrete bases and cement sand levelling screeds to receive floorings — Code of practice*.

BS 8204-3, *Polymer modified cementitious levelling screeds and wearing screeds — Part 3: Code of practice*.

BS EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*.

BS EN 934-2, *Admixtures for concrete, mortar and grout — Part 2: Concrete admixtures — Definitions, requirements, conformity, marking and labelling*.

BS EN 12878, *Pigments for the colouring of building materials based on cement and/or lime — Specifications and methods of test*.

BS EN 13139, *Aggregates for mortar*.

BS EN 13318, *Screed material and floor screeds — Definitions*.

BS EN 13813, *Screed material and floor screeds — Screed material — Properties and requirements*.

Hospital Technical Memorandum No. 2, Anti-static precautions: Flooring in Anaesthetizing Areas, London: The Stationery Office, 1977¹⁾.

3 Terms and definitions

For the purposes of this part of BS 8204, the terms and definitions given in BS 6100-1, BS 6100-6, BS EN 13318 and the following apply.

3.1

base

building element that provides the support for a screed and floor finishes

3.2

flooring

uppermost fixed layer of a floor that is designed to provide a wearing surface

3.3

screed

layer of material laid in situ, directly onto a base, bonded or unbonded, or onto an intermediate layer or insulation layer, for one or both of the following purposes:

- to obtain a defined level;
- to carry the final flooring

¹⁾ Obtainable from The Stationery Office.

3.4

base course

first layer of marble or other natural stone aggregate mixture applied to the screed

3.5

terrazzo

mixture of marble or other natural stone aggregates, with Portland cement, which is ground after setting to expose the aggregate and provide a smooth hard-wearing finish

NOTE 1 The mixture may also include suitable glass aggregate.

NOTE 2 Terrazzo incorporates colouring pigments where necessary.

4 Exchange of information and time schedule

NOTE This clause deals with the exchange of information and time schedule for the whole floor, including bases and screeds.

4.1 General

It is essential that consultations and exchange of information between all parties concerned with the building operations are arranged at an early date. This will enable each party to have full knowledge of the particulars of the work so that they can cooperate in producing the conditions required to complete a satisfactory job.

4.2 Exchange of information

It is essential that the designer provides in good time all relevant information to those responsible for laying the flooring and to others whose work might be affected, including whichever of the following are applicable:

- a) description, situation and address of site and means of access;
- b) those conditions of contract which could practically affect this particular work;
- c) degree of weather protection afforded by the structure;
- d) location and area of in situ terrazzo flooring to be laid;
- e) age and nature of the base, including information about the previous use of the floor which could impair adhesion and any preparatory treatment required;
- f) survey of the base including surface regularity and departure from datum;
- g) nature and extent of necessary repairs and other preliminary work;
- h) thickness of floor and flooring;
- i) finished floor level, falls and maximum permissible departure from datum in each location;
- j) specification including proportions and type, colour and size of aggregate of flooring to be laid;
- k) class of surface regularity of base (see BS 8204-1:2003, Table 5);
- l) slip resistance;
- m) type of damp-proofing and insulation;
- n) type and thickness of levelling screed;
- o) category of in situ crushing resistance (soundness) required;
- p) any work consequent upon services passing through the floor;
- q) treatment of joints;
- r) treatment of channels;
- s) treatment of skirtings;
- t) treatment of junctions with adjacent floors and floorings;
- u) type of finish of base;
- v) any special requirements related to underfloor heating;
- w) minimum time intervals between stages of work and the application of heat in the building;

- x) date for the completion of the base to receive the terrazzo;
- y) dates for the start and completion of various sections of the floor;
- z) details of any compliance testing required;
- aa) any other requirements for materials, design or work on site.

4.3 Time schedule

In considering the schedule, in addition to the usual intervals between commencement and completion of work by the various trades involved, allowances should be made for the following:

- a) completion of the building envelope to allow construction of a levelling screed and terrazzo wearing surface protected from rain, wind and sun;
- b) delays due to frost and cold weather;
- c) curing and drying of the base concrete before the screed and flooring is laid, where applicable;
- d) period of protection of the completed floor from damage by other trades, including restriction of access.

5 Materials

5.1 Cement

5.1.1 Cement for screeds

The cement for screeds should be grey Portland cement conforming to at least CEM 1 class 42.5N of BS EN 197-1:2000.

5.1.2 Cement for terrazzo flooring

The cement for the terrazzo flooring should be grey or white Portland cement conforming to at least CEM 1 class 42.5N of BS EN 197-1:2000.

WARNING 1 When Portland cement is mixed with water, or even becomes damp, alkalis are released that can be harmful to the skin. The effect depends on the length of contact, any abrasion, the individual and the part of the body involved. Suitable protective clothing should be worn. If eyes are affected, they should be washed out without delay and medical advice sought.

WARNING 2 Cement mortar and concrete might until set cause both irritant and allergic contact dermatitis.

- Irritant contact dermatitis is due to a combination of the wetness, alkalinity and abrasiveness of the constituent material.
- Allergic contact dermatitis is caused mainly by the sensitivity of an individual's skin to hexavalent chromium salts.

5.2 Aggregates

5.2.1 Aggregates for screeds

Aggregates for screeds should conform to BS 8204-1:2003, 5.3.

5.2.2 Aggregates for terrazzo flooring

Aggregates for terrazzo wearing surfaces should be crushed marble, natural stone or glass, should be angular as distinct from elongated and flaky, and should be free from fines and dust. Aggregates should be washed and single-sized between 3 mm and 25 mm and may be used individually or mixed.

NOTE The size of aggregate for the base course can range from 2 mm to 6 mm, whilst larger aggregate, generally from 9 mm to 15 mm, can be spread by hand on top of the base course, depending on the decorative effect required. See 7.10.

Sands should conform to BS EN 13139:2002 0/4 mm (MP) category 1.

5.2.3 Deleterious material

Aggregates should not contain any deleterious material in sufficient quantity to affect adversely the integrity of the surface finish. For example, coal, lignite and iron pyrites in the aggregate can cause "pop-outs". Some aggregates exhibit higher than average drying shrinkage and should not be used as they give rise to a greater risk of cracking (see BRE Digest 357 [1] and BS EN 1367-4).

5.3 Pigments

Pigments should conform to BS EN 12878. Other pigments may be used by agreement between the parties concerned, although those not conforming to BS EN 12878 could be subject to fading.

5.4 Admixtures

Admixtures should conform to BS 934-2. The following admixtures may be used, on occasion, in the laying of the screed. They are rarely necessary or encountered in the terrazzo flooring.

- a) *Air-entraining*. Air-entraining admixtures entrain a small amount of fine air bubbles that help to reduce “bleeding” of free water and improve the finished surface of the concrete base or screed. An excessive amount of entrained air should be avoided as this can reduce the strength.
- b) *Water reducing*. Water reducing admixtures may be used to increase consistence and reduce the water content otherwise required in the mix. They may also entrain a small quantity of air and cause retardation of setting.
- c) *Superplasticizing*. Superplasticizing admixtures greatly increase consistence at normal water contents for a limited period to produce “flowing concrete” which needs little or no compaction. Alternatively they may be used as high range water reducing admixtures.
- d) *Accelerating*. Accelerating admixtures may be used to accelerate the rate of setting and hardening of concrete in cold weather. Admixtures which contain calcium chloride, which can cause corrosion of metals, should not be used in, or in materials adjacent to, reinforced concrete or concrete or screeds containing embedded metal.
- e) *Retarding*. Retarding admixtures decrease the initial rate of reaction between cement and water and thereby delay the setting of the concrete.

5.5 Additional materials

Additional materials such as polymer dispersions may be used in the screed, by agreement between the parties concerned in the laying of the terrazzo flooring, provided evidence of satisfactory performance in use is available.

5.6 Water

Water should be clean and free from materials deleterious to levelling screeds and to terrazzo flooring in their fresh and hardened states. In general, drinking water is suitable for this use. In cases of doubt the water should conform to BS EN 1008.

5.7 Reinforcement

Where light reinforcement is required in a screed it should consist of steel fabric of type D49 or A98 conforming to BS 4483:1998, Table 1. Alternatively, a 50 mm square, 16 gauge welded wire mesh flat sheet should be used.

NOTE Heavier reinforcement might be required by the designer for use in levelling screeds intended for structural purposes.

5.8 Dividing strips

Dividing strips should be made of brass, aluminium alloy or coloured plastics and should be extruded in such a manner as to provide a key allowing the sand and cement haunching on either side of the strip stopping the strip debonding from the screed. All metal strips should be clean and free from oil or chemical releasing agents that might cause lack of bond at its interface with the terrazzo. Aluminium strip should have protective treatment to prevent alkali attack from cement.

6 Design considerations

6.1 General

The in situ terrazzo floor should be constructed in one of the following ways.

- a) On a levelling screed bonded to a prepared concrete slab.
- b) On an unbonded or floating levelling screed thick enough or reinforced to provide sufficient rigidity and reduce the risk of curling.
- c) On a structural slab direct finished to receive the applied flooring.

NOTE Method c) is rarely used.