

GUIDE TO BE EN 13813

Introduction

BS 4721: Specification for ready-mixed building mortars was withdrawn at the end of January 2005 and replaced by BS EN 998 (Parts 1 and 2) Specification for mortar for masonry and BS EN 13813: Screed material and floor screeds - Screed material - Properties and requirements which was published in November 2002, and is now the product Standard for the specification of screed material. BS EN 998 does not cover screed material (traditionally screed material has been specified in accordance with the requirements prescribed in Section 4 of BS 4721) therefore specifiers of screed material need to become familiar with the requirements of BS EN 13813.

A further change that occurred at the same time is that the testing Standard BS 4551: Methods of testing mortars,

screeds and plasters will be largely replaced by a new series of European test methods, which have been published as BS EN 1015: Methods of test for mortar for masonry, a multi part Standard. BS 4551 has been republished as a single part Standard to cover a limited number of physical tests methods (which have not been superseded by BS EN 1015) and chemical test methods currently contained within Part 2 of BS 4551, however all references to screed material have been deleted. A new series of test methods for screed material have been published as BS EN 13892. Therefore from February 2005 there has been a complete separation of both product and testing Standards for mortar and screed material.

The new Standards now applicable to screed material are:

BS EN 13318	Screed material and floor screeds - Definitions.
BS EN 13813	Screed material and floor screeds - Screed material - Properties and requirements
BS EN 13892-1	Methods of test for screed materials - Part 1 : Sampling, making and curing specimens for test
BS EN 13892-2	Methods of test for screed materials - Part 2 : Determination of flexural and compressive strength
BS EN 13892-3	Methods of test for screed materials - Part 3 : Determination of wear resistance- Bohme
BS EN 13892-4	Methods of test for screed materials - Part 4 : Determination of wear resistance- BCA
BS EN 13892-5	Methods of test for screed materials - Part 5 : Determination of wear resistance to rolling wheel of screed material for wearing layer
BS EN 13892-6	Methods of test for screed materials - Part 6 : Determination of surface hardness
BS EN 13892-7	Methods of test for screed materials - Part 7 : Determination of wear resistance to rolling wheel of screed material with floor coverings
BS EN 13892-8	Methods of test for screed materials - Part 8 : Determination of bond strength

Table 1 : Standards for screed material

A series of British Standards dealing with the subject of the design and installation (workmanships) of screeds will remain available. These have been revised to take account

of changes in standardization and are published as Codes of practice.

BS 8204-1	Screeds, bases and in situ floorings - Part 1 : Concrete bases and cement sand levelling screeds to receive floorings
BS 8204-2	Screeds, bases and in situ floorings - Part 2 : Concrete wearing surfaces
BS 8204-3	Screeds, bases and in situ floorings - Part 3 : Polymer modified cementitious wearing surfaces
BS 8204-4	Screeds, bases and in situ floorings - Part 4 : Terrazzo wearing surfaces
BS 8204-5	Screeds, bases and in situ floorings - Part 5 : Mastic asphalt wearing underlays and wearing surfaces
BS 8204-6	Screeds, bases and in situ floorings - Part 6 : Synthetic resin floorings
BS 8204-7	Screeds, bases and in situ floorings - Part 7 : Pumpable self-smoothing screeds
BS 8000-9	Workmanship on building sites - Part 9 : Cementitious levelling screeds and wearing screeds

Table 2 : Standards for design and workmanship

Further Information:

For further technical information please call: **08701 116 116.**

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Definitions

Levelling screed	A screed suitably finished to obtain a defined level and to receive the final flooring.
Wearing screed	A screed that serves as the flooring, historically in the UK this type of screed has been known as a granolithic or concrete topping.

Application of the new standards

The large number of Standards now available may cause some confusion to specifiers, over which Standard should be used, the Standards listed in Table 2 do not deal with screed as a material other than giving some advice on constituent materials. The statement is made in BS 8204-1 that “Ready-to-use screeding material should conform to the performance requirements of BS EN 13813”.

BS EN 13318 contains no requirements, it lists definitions for screed materials, construction techniques and practices related to the installation of screeds. The Standard is set out in tabular form in the three main languages of the European Union (English, German and French).

A number of the Standards listed in Table 1 of this data sheet will not generally be applicable in the UK. Three test methods are listed for measuring the abrasion resistance of a cement based wearing screed (BS EN 13892: Parts 3, 4 and, 5). There is no UK experience of Part 3 (a German test method) or Part 5 (a Scandinavian test method), future revisions of the Standards may lead to two of these methods being eliminated. Research work undertaken has to date not established a correlation between the three methods. Part 7 of BS EN 13892 uses the same test apparatus as Part 5 but in a different type of construction application. Where wearing screeds are being specified the BCA test method (Part 4) is the appropriate test to use in the UK.

BS EN 13813 Screed material and floor screeds-Screed material-Properties and requirements.

This Standard is a product Standard and does not address workmanship or site practice (refer to the relevant part of BS 8204). The Standard covers screeding materials based on different binder types

- Cement (CT)
- Calcium sulfate (CA)
- Magnesite (MA)
- Mastic asphalt (AS)
- Synthetic resin (SR)

For each of the binder types, tests are prescribed some of which the screed material producer is required to undertake (normative tests) others, which the screed material producer must undertake if he wishes to declare

a particular characteristic. This data sheet only considers those types of screed materials produced by Tarmac.

Compressive strength

The producer of cementitious and calcium sulfate screed material is required (normative tests) to declare the compressive strength class of the hardened material. Compressive strength must be designated by a “C” followed by the compressive strength class in accordance with Table 2 of BS EN 13813 reproduced as Table 3 of this data sheet. Compressive strength is required to be determined in accordance with BS EN 13892-2.

Class	C5	C7	C12	C16	C20	C25	C30	C35	C40	C50	C60	C70	C80
Compressive strength in N/mm²	5	7	12	16	20	25	30	35	40	50	60	70	80

Table 3 : Compressive strength classes for screed material

Flexural strength

The producer of cementitious and calcium sulfate screed material is required to declare the flexural strength class of the hardened material. Flexural strength is designated by an “F” followed by the flexural strength class in accordance with Table 3 of BS EN 13813 reproduced as Table 4 of this data sheet. Flexural strength is required to be determined in accordance with BS EN 13892-2.

Class	F1	F2	F3	F4	F5	F6	F7	F10	F15	F20	F30	F40	F50
Flexural strength in N/mm²	1	2	3	4	5	6	7	10	15	20	30	40	50

Table 4 : Flexural strength classes for screed material

Note: It should be noted that both compressive and flexural strength are determined on prism specimens. Historically in the UK cube specimens have been used to determine the compressive strength of screed material, the specifier should note that the results obtained by using different shaped test specimens are not directly comparable.

Wear resistance

Where cementitious wearing screed material is specified the producer is required to declare the wear resistance class. The wear resistance (BCA) is designated by the letters “AR” followed by the maximum wear depth in mm divided by 100 in accordance with Table 5 (this corresponds to Table 5 of BS EN 13813).

Class	AR6	AR4	AR2	AR1	AR0.5
Maximum wear depth in µm	600	400	200	100	50

Table 5 : Wear resistance BCA classes for cementitious wearing screeds

pH value

There is a requirement for calcium sulfate screed material that the pH value is ≥ 7.

Setting time

The producer of a cementitious or calcium sulfate screed material has the option if he wishes to declare the setting time.

Reaction to fire

Screed material, which contains less than 1.0 % homogenously distributed organic material, is classified as reaction to fire Class A1 without the need for testing (Commission Directive 96/603/EC). Products covered by this classification are assumed to make no contribution to fire growth or to the fully developed fire. Where a screed material contains more than 1.0% organic material it is required to be classified in accordance with BS EN 13501-1.

Special characteristics

The producer of a screed material has the option to declare special characteristics if applicable, e.g. water vapour permeability or impact sound insulation.

Designation of screed materials

Screed materials are required to be described by the binder type and the class of each of the normative requirements and if desired other characteristics.

Equivalence with traditional screed designations

The producer of the screed material will declare a material in a performance class that he is confident in

For example:

- A cementitious screed material (CT) not used as a wearing surface in compressive strength class C12 and flexural strength class F2 is designated by:

EN 13813 CT-C12-F2

- A calcium sulfate screed material (CA) in compressive strength class C12 and flexural strength class F3 is designated by:

EN 13813 CA-C12-F3

Where a manufacturer adds other materials to achieve special properties these materials may be mentioned in the designation.

- A cementitious screed material (CT) used as a wearing surface modified by the addition of a polymer and having compressive strength class C40 and flexural strength class F4 and meeting the requirements of BCA wear resistance class AR1 is designated by:

EN 13813 Polymer modified CT-C40-F4-AR1

The purchaser of screeds needs to become familiar with these descriptions, which will be shown on quotations and delivery tickets. For a limited period of time the equivalent traditional designation will also be shown.

BS 4721 Traditional designation	Minimum 28 day Compressive strength N/mm²	BS EN 13813 Compressive strength class	BS EN 13813 Flexural strength class
a	27.0	C25	F3
b	18.0	C16	F2
c	12.5	C12	F1

Table 6 : Comparison of traditional designations with strength classes. These results are indicative and may be subject to change as further test results become available.

CE marking

BS EN 13813 is a harmonized Standard and products conforming to it may therefore be CE marked. CE marking is not a quality mark it signifies that the product conforms to the essential requirements of the Construction Products Directive. There are a number of systems of attestation that are applicable to CE marking not all of these require third party quality certification.

Quality

A quality system has been implemented throughout the company since 1975 and quality procedures are in conformity with BS EN ISO 9001: 2000. The majority of Tarmac factories hold third party certification from the British Standards Institution. Details of the certification status of individual factories may be obtained from your nearest Tarmac Sales Office.

achieving taking into account the variability of the production process and the precision of the test method.

Health and safety

There is a real danger of Contact Dermatitis or serious burns. If skin comes into contact with wet cement mixes such as fresh concrete, mortar or screed wear suitable protective clothing and eye protection. Where skin contact occurs either directly or through saturated clothing wash immediately with soap and water. For eye contact, immediately wash out eyes thoroughly with clean water. If swallowed wash out mouth and drink plenty of water.

For further Information refer to Tarmac Safety Data Sheet No. 17.