

European standards for In situ Flooring products

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INTRODUCTION

2002 saw the publication of the first ever performance standard in the UK for flooring products to be applied in situ. Although published as a British Standard it had been developed as a European standard and issued by the European Committee for Standardization, known as CEN (Comité Européen de Normalisation). Under CEN rules it will now have been adopted as a national standard by all the participating European countries, including the UK.

Publication of the standard was the culmination of 10 years difficult development work by the CEN committee on which there was strong representation from the United Kingdom. The difficulties arose from the need to reconcile different national interests and practices, at the same time providing a standard that was both realistic in its quality requirements without imposing unnecessary burdens in testing costs on manufacturers.

Of course there have been standards for in situ floorings in the past but the suite of BS 8204⁽¹⁾ standards covered only the installation procedures and the inspection and testing of the installed floor. They did not attempt to specify in detail the performance properties of the products to be applied. Hence the new European standards are breaking into entirely new ground.

THE EUROPEAN FLOORING STANDARDS

The British / European standards that have now been published are:

BS EN 13318: Screed materials and floor screeds – Definitions

It is clearly important that the new standards are unambiguous in interpretation and clearly understood across the whole of Europe. So this standard provides agreed definitions for the technical terms being used in the product standard and provides these in French and German as well as English.

BS EN 13813: Screed materials and floor screeds – Screed material, Properties and requirements

This is the product standard that describes the essential characteristics of flooring products, specifies the methods by which these characteristics are to be determined and, in some cases, defines minimum levels of acceptable performance.

Related to this product standard is a complementary suite of eight test method standards, comprising the following:

BS EN 13892: Methods of test for screed materials

- Part 1 Sampling, making and curing specimens for test
- Part 2 Determination of flexural and compressive strength
- Part 3 Determination of wear resistance – Böhme
- Part 4 Determination of wear resistance – BCA
- Part 5 Determination of wear resistance to rolling wheel
- Part 6 Determination of surface hardness
- Part 7 Determination of resistance to rolling wheel, with floor coverings
- Part 8 Determination of bond strength

THE SCREED MATERIAL STANDARD: BS EN 13813

To understand this standard, it is first necessary to define what is meant by screed material, since this controls the range of products that can be claimed to comply with the standard. In fact, the CEN committee has deliberately made the definition of 'screed' extremely broad so that it can cover almost every type of product that is applied in situ to form a floor.

The official definition of a screed that is given in BS EN 13318 is:

Layer or layers of screed material laid in situ, directly onto a base, bonded or unbonded, or onto an intermediate layer or insulating layer, to obtain one or more of the following purposes: to obtain a defined level; to carry the final flooring; to provide a wearing surface.

This definition does not have any limits on thickness, nor on the method of application. It can therefore include levelling screeds and smoothing compounds as well as wearing screeds, whether these are applied by trowel or flowed or pumped into place. By its breadth it introduces a new much wider meaning to the word 'screed' which hitherto has been largely confined to materials that are trowel-applied and levelled off with screeding bars. Also it is not confined to intermediate layers but applies equally to the finished surface.

Almost the only type of in situ floor that does not fall within the scope of the standard is a directly finished concrete slab.

There is a restriction though, in that the standard is intended to apply only to products manufactured in a factory. Compliance is then claimed for the product in the state that it leaves the 'factory gate'. Consequently it does not strictly apply to products that are site-batched, even if the constituents are all of standard quality. However there is a footnote which states that "*the standard can be used in conjunction with codes of application and national specifications for site made material produced and laid by the same contractor*". The catch is that the contractor must also be able to demonstrate a quality control system comparable to that which would apply in a factory.

TYPES OF SCREED

Five different categories of product are identified in the standard, differentiated by their binder type: these are

| | |
|----|-----------------|
| CT | cementitious |
| CA | calcium sulfate |
| MA | magnesite |
| AS | mastic asphalt |
| SR | synthetic resin |

and different performance requirements are set for each type.

Polymer modified cement screed materials, frequently used for levelling or installing falls under resin or other floorings are included in the cementitious category, but then carry a 'polymer-modified CT' designation. The traditional 'granolithic' or similar type screed materials can similarly carry a 'hard aggregate CT' designation.

PERFORMANCE REQUIREMENTS

The European standard specifies the essential performance characteristics for each type of screed material, and this is summarised in Table 1.

Table 1: Screed materials and tests that apply to each type

| Screed materials based on : | compressive strength | flexural strength | wear resistance "Böhme" | wear resistance "BCA" | wear resistance to rolling wheel | surface hardness | resistance to indentation | resistance to rolling wheel with floor covering | setting time | shrinkage and swelling | consistency | pH value | modulus of elasticity | Impact resistance | bond strength | |
|-----------------------------|----------------------|-------------------|-------------------------|-----------------------|----------------------------------|------------------|---------------------------|---|--------------|------------------------|-------------|----------|-----------------------|-------------------|---------------|---|
| Cement | N | N | N (one of three) | | | O | - | O | O | O | O | O | O | O | O | O |
| Calcium sulfate | N | N | O | O | O | O | - | O | O | O | O | N | O | - | O | |
| Magnesite | N | N | O | O | O | N | - | O | - | O | O | O | O | - | O | |
| Mastic asphalt | - | - | O | O | O | - | N | O | - | - | - | - | - | - | - | |
| Synthetic resin | O | O | - | N (one of two) | | O | - | O | - | O | O | - | O | N | N | |

This table describes the basic characteristics. The letter 'N' signifies Normative (the 'Eurospeak' for mandatory) which means that the product type must be tested for that characteristic. The letter 'O' signifies Optional, in effect, where relevant. The intention is that the manufacturer can choose whether to declare a value for that particular characteristic. Alternatively, a specifier may require a product with a minimum level of an 'optional' characteristic if it is regarded as important for a particular application.

Standard test methods are specified for each of these characteristics and must be used if compliance with the standard is claimed.

WEAR RESISTANCE

Probably the most controversial characteristic to be assessed is wear resistance, where three alternative test methods are specified, because agreement on a single method could not be reached. In the UK we are most familiar with the BCA tester that for some years has been specified in BS 8204-2⁽²⁾, but there is negligible experience here with the Swedish Rolling wheel or the German Böhme machines. Unfortunately it is not yet known whether there is a direct correlation between the three tests. Developed in different countries, there have been only limited attempts to compare the results obtained with a range of typical products. The long term intention is that once there is practical experience of the operation of the standard then hopefully a consensus will emerge on which of the three methods should eventually be used as standard. This is not an ideal situation as in the meantime it could signify that certified products tested on different machines are not strictly equivalent!

SPECIAL CHARACTERISTICS

The standard also lists a number of special characteristics that may become relevant in particular situations. In each case a test method is specified and must be used if compliance with this standard is claimed for any particular characteristic. Important characteristics included here include chemical resistance, electrical resistance (for anti-static or conductive floors) and thermal or acoustic insulation.

CE MARKING

If a product meets all the relevant requirements of the standard, the manufacturer is entitled to affix a CE mark to the packaging or label or delivery note for the screed material. This CE mark signifies that a product meets the technical requirements of the standard *and* that the specified system of attestation of conformity has been applied.

In the case of screed materials conforming to BS EN 13813 there is no requirement for any independent certification for the product. This arises because the level of Attestation of Conformity for such products has been set by the European Commission, so that all testing and quality assurance remain the sole responsibility of the manufacturer, without any independent certification being necessary.

CE marking has now been implemented throughout the member states of the EU, but is not a legal requirement in the UK at present. However some European countries now require many products traded there to be CE marked. This applies not only to those products manufactured there, but also to those products imported into them. UK manufacturers wishing to export their products into mainland Europe could therefore find it necessary to CE mark that part of their production.

Similarly, products imported into the UK from Europe may well come bearing a CE mark and this could lead to pressure from specifiers, or just as a reaction to competition, for UK manufacturers to adopt CE marking as standard. Since there are no substantial independent costs involved, other than in re-labelling, CE marking of screed materials may eventually become the norm by default rather than by official edict!

SUMMARY

The standard for screed materials, published in 2002, is still too new for producers to be fully aware of all the pitfalls or opportunities it offers, and this will take a few years to emerge.

Why do we need such standards? to provide for the specifier a means whereby the quality of a screed material can be assessed before it is selected or used: to provide an opportunity for the screed material manufacturer to demonstrate the quality of their product or give them a benchmark for their development. Overall, standards provide a means whereby the quality of in situ floorings can be assured for the benefit of all.

References:

- 1 BS 8204: Screeds, bases and in situ floorings: Parts 1 to 7
- 2 BS 8204-2: Screeds, bases and in situ floorings – Part 2: Concrete wearing surfaces

All of the British or European standard documents referred to in the text can be purchased direct from the British Standards Institution, telephone 0208 996 9000.

FeRFA

FeRFA, the Resin Flooring Association represents resin flooring product manufacturers and specialist contractors, and allied trades. Established in 1969, FeRFA currently represents over 60 U.K. based companies. The Association has established Codes of Practice for each of its categories of member. It takes an active role in promoting Resin flooring and in developing both national and international standards.