

# Flowing Screed

## Application Guide

The British Standard for testing a base to receive a resilient floor covering is to use a hair hydrometer to the method defined in BS8203: 2001. This provides a non destructive test method and will give reliable results on EuroMix Flowing Screed for Relative Humidity near to 75% (which is generally the required limit for floor finishes) Above this level of moisture the hair hydrometer may not always provide a meaningful reading.

For correct results, the BS8023 method must be strictly adhered to, including the use of a correctly sized and insulated box sealed to the floor, a sufficiently long test for equilibrium to be reached and the use (where appropriate) of an impervious sheet around the instrument.

### Priming

Where cement-based products such as levelling compounds or adhesives are to be laid over the EuroMix Flowing Screed, it must be dry and must be sealed first with Sikafloor 155W or other approved material.

### Testing

EuroMix Flowing Screeds may be tested using in-situ crushing resistance equipment, sometimes referred to as the BRE Screed Tester.

### Water ingress

Avoid water ingress to completed screeds, and arrange to dry out accidental ingress as soon as possible.

The screed may suffer a minor loss of strength if it becomes wet, however, this strength will generally be regained when it dries out.

### Site conditions

The performance and finish achieved by EuroMix Flowing Screed is dependant on the conditions in which it is installed and for a period thereafter. The following site conditions must be provided:

During the pour and for three days thereafter:

- The entire area where the screed is to be installed must be frost-free and not subject to temperatures of less than 2°C or more than 30°C.
- The surface of the screed must be protected from water, severe draughts and direct sunlight.
- The temperature of the screed mortar should not fall below 5°C.

During the drying period:

- A typical 40mm thick screed can be expected to dry to 0.5% moisture content in 40 days under ideal conditions. This can however be greatly effected by actual conditions.
- As previously discussed, drying may be accelerated by careful use of underfloor heating after seven days, or by the use of dehumidifiers.

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The following is the recommended application procedure for EuroMix Flowing Screed products. It is intended to provide guidance only. Use of EuroMix Flowing Screed should be in accordance with BS 8204 Part 7:2003, *Code of practice for pumpable self-smoothing screeds*.

When using any EuroMix product, reference must be made to any specification requirements which are applicable and to the relevant codes of practice. Regard must be had to the specific building elements or other products to which the EuroMix product is to be applied, and reference should be made to any guidance or standards required to be followed for other elements of the structure.

No responsibility can be taken by CPI for any defects or deficiencies in the completed floor arising from any failure to comply with recommended practice in applying EuroMix products or resulting from any failure to comply with the manufacturer's instructions or other instructions issued in respect of other elements of the building structure.

### 1. Design considerations

#### Screed selection

Pumpable self-smoothing screeds are designed for use where rapid installation is required in dry internal locations. They cannot be laid to falls. Calcium sulfate screeds will often be chosen when a thicker screed section can be accommodated, and when there is time available in the construction programme for drying out before application of floor finishes.

Calcium sulfate screeds are not suitable where a thin section (<25mm) is required, where the screed is to be a wearing screed or when quick drying is important. Calcium sulfate screeds are unsuitable for locations where the screed will become wet in service.

On concrete bases it is essential that there is suitable protection against rising damp so that normal drying properties of the screed and satisfactory service conditions will be achieved.

#### Design of base

The function of a screed is to provide a smooth surface for the application of final floor covering. It is not intended to make any contribution to the structural performance of the floor. Therefore the base should be designed to withstand all stresses and loading that will occur during service. It should be provided with all necessary expansion, contraction and crack inducement joints. Cracking of the base, however caused, is likely to reflect in the screed.

#### Screed construction

**Bonded construction** – It is not recommended that EuroMix Flowing Screeds are used in bonded applications. They should always be placed onto a debonding membrane.

**Unbonded construction** – The screed is laid over a membrane that separates the screed from the base.

It minimises the requirement for base preparation and sealing of gaps. The membrane may be of sufficient thickness and specification to fulfil the requirements of a damp proof membrane (dpm), but it is usually a much thinner 500g slip membrane, where the structure already incorporates an approved dpm. It is recommended that there is a dpm between any in-situ concrete and the screed.

**Floating construction** – The screed is laid onto an insulation board, for thermal and/or sound insulation or for void filling. The screed will have little direct support from the base and it is essential therefore that the insulation has adequate strength and structural stability.

#### Screed thickness

**Maximum thicknesses** – EuroMix Flowing Screed can be laid to a maximum thickness of approx 80mm at the deepest point. If a greater thickness is required it should be made up by the use of insulation boards under the screed. Note that increased thickness will lead to longer drying times.

**Minimum thicknesses** – The following are the recommended minimum thickness for the laying of EuroMix Flowing Screed.

Screed type	Minimum thickness
Partially bonded	30mm
Unbonded	30mm
Floating	Normal Domestic only 40mm 35mm
Minimum cover to pipes, conduits and trunking	20mm
Minimum cover to underfloor heating pipes	25mm

## Location of services

Attention is drawn to the need to comply with various statutory requirements. Where services must be located within the screed, it is essential that good practice is followed to avoid cracking and subsequent problems with floor finishes. Pipes and conduits within the thickness of the screed should be securely anchored in position and fully tested prior to screeding. A minimum cover of 25mm over the pipes must be observed.

## Heated screeds

Heated screeds are generally laid as floating screeds in conjunction with proprietary underfloor heating systems. The manufacturer of the heating system should provide their installation details. Heating elements must be securely anchored in position and, for hot water systems, a minimum cover of 25mm to the top of the pipes must be observed. Initial operation and testing of the heating system must follow the manufacturer's guidelines and the recommendations of the relevant standards and codes of practice.

## Screeds to stairs and screeds to falls

EuroMix Flowing Screed is not suitable for use on stairs or to falls. These areas should be boxed out and later placed by hand using appropriate materials.

## Bay sizes, position of joints

EuroMix Flowing Screed may be laid in much larger areas than conventional screeds, with up to 2,000m<sup>2</sup> being possible for rectangular areas. However as aspect ratios increase, control joints are required. These should be incorporated to ensure that aspect ratios never exceed 1:6, ie. a corridor 2m in width should incorporate joints at a minimum of every 12m. Joints are also required at appropriate geometries, eg 'L' shapes. Extra control joints are also advisable in heated screeds and where there is a possibility of substantial solar gain, eg. adjacent to large south-facing windows or in rooms with large roof lights.

Additionally, where there are structural movement joints or expansion joints in the base, these must be continued through to the surface of the finished flooring.

Heated screeds should include joints in accordance with manufacturer's recommendations.

## Screed tolerances

**Level** – The maximum permissible departure of the level of the screed from an agreed datum should be specified, taking into account the area of the floor and its use.

**Surface regularity** – The class of local surface regularity should be specified in accordance with the classification set out in BS 8204:

Class	Maximum permissible departure from a 3m straightedge in contact with the floor	Application
SR1	3mm	High standard - commercial/industrial
SR2	5mm	Normal standard - commercial/industrial
SR3	10mm	Utility standard - other floors

Note that EuroMix Flowing Screeds are self-smoothing, but will not self-level to a very high standard of surface regularity. SR2 is a typical expectation.

## 2. WORK ON SITE

Care should be taken to ensure good workmanship and efficient supervision. Competent, appropriately trained operatives should be employed. Those laying the screed should be in possession of these Application Guidelines and relevant health and safety information.

Adequate steps should be taken to protect the work from the weather, to ensure suitable drying conditions and to prevent ingress of water.

## 3. PREPARATION OF THE BASE

Where applicable, the structure must include a damp proof membrane (dpm) as protection against rising damp. The dpm may be above or below the base slab. Note that damp concrete bases (e.g. with residual construction moisture) can result in considerably longer drying times for a screed laid over that base. Consideration should therefore be given to the need for a dpm over the base. The designer and Main Contractor are responsible for determining the need for a dpm.

The procedure for preparation of the base depends on the type of screed construction:

### Bonded screed

Bonded screeds are never recommended.

### Unbonded screed

Remove dust and debris immediately prior to screeding. Lay separating membrane as per manufacturer's instructions including minimum 50mm lapped and taped joints. The membrane can be of dpm grade if required.

### Floating screed over insulation boards

Remove dust and debris and lay insulation on smooth level base with tightly butted joints, ensuring that boards are fully and appropriately supported. Lay separating membrane as per the manufacturer's instructions including minimum 50mm lapped and taped joints. The membrane can be of dpm grade if specified.

### Floating screed over sound insulation sheet

Remove dust and debris and lay insulation on smooth level base as per manufacturer's instructions. Ensure the insulation is laid flat on the base. Overlay the entire floor with separating membrane as above.

## 4. SETTING OUT AND LEVELS

Levels for EuroMix Flowing Screed are usually found by using a laser level set from a given datum or a water level. Levelling tripods are a useful tool for regulating the finished screed. The screed is finished by dappling the surface of the slurry using a floating T-bar to help remove any air bubbles, and then drawing the T-bar across the surface at 90° to the first pass with a lighter dappling motion. Dappling should be carried out immediately following placing.

## 5. MIXING THE SCREED

EuroMix Flowing Screeds should be mixed in a suitable mixer or continuous mixing pump. Clean water should be added at a constant steady rate to ensure an even mix consistency, a workable material and uniformity of the finished coating. The mixing output affects the proportion of water required but this is typically 4-5 litres per 25kg bag.

The EuroMix Flowing Screed slurry should be checked for workability by carrying out a flow test with the approved steel cone on a dry level plate. The Nominal Flow Value must lie in the range 230mm to 260mm.

Remixing or later addition of water is not permitted.

## 6. LAYING AND FINISHES

### General

Ensure that all gaps in the base (particularly on precast or beam and block floors) are sealed to prevent leakage of the EuroMix Flowing Screed. Polythene sheet must be laid flat on the base or insulation with no folds. If the sheet is turned up at a wall or column, or if taped to a perimeter strip skirt, it must be ensured that there is sufficient space for the screed to reach the wall to the full depth of the screed.

### Perimeter expansion strip

All installations require a perimeter expansion strip. This comprises compressible material such as closed cell polyethylene. As well as surrounding the perimeter and being fixed to all walls in contact with the screed, this must also be fixed to all piers, upstands or similar. It will allow for any small movement as the screed dries and hardens and will accommodate small thermal movements. The expansion strip may conveniently include a polythene skirt.

A minimum expansion strip thickness of 5mm is recommended. For heated floors or where solar gain is expected, e.g. adjacent to south-facing windows or under large glass skylights, and for lengths in excess of 10m, use 10mm thick strip.

### Joints

Very large pours of unbonded or floating construction, with a dimension exceeding 40m without a break (such as dividing walls), should have a bay joint of compressible material. Alternatively, a full depth saw cut might be made as soon as the screed has hardened, to form a bay joint. With all screed types it is necessary to form joints above the line of structural movement joints.

### Laying and finishing

EuroMix Flowing Screed is delivered to the floor by pump, which should be capable of delivering 5m<sup>3</sup>/hour. A 10mm sieve screen must be fitted to the pump. Horizontal and vertical delivery capability of pumps varies and the recommendation of the manufacturer should be adhered to.

### Installing

Once mixed, EuroMix Flowing Screed must be placed and finished as soon as practical. It should not be placed and then finished at a later stage as this could lead to a poor finish on the surface. Screed slurry contains water and as such is prone to damage by frost. Winter working conditions are therefore similar to those for laying concrete, i.e. work should stop at temperatures of 5°C and falling and may

resume again at 4°C and rising. Providing internal temperatures are maintained as above, work may continue when the outside temperature is as low as say 2°C. Work should also be halted in temperatures of 30°C and over, as high temperatures can considerably extend hardening times and may also reduce final strengths.

Areas of over 1,000m<sup>2</sup> may be laid in one day. Where day joints are required, shuttering should be used to create a vertical edge. The next day's pour may be butted up against the first pour. However, if several days have elapsed between pours such that the first pour is beginning to dry out, the edge should be sealed with Sikafloor 155W or other approved material before commencing the next pour.

### Curing / trafficking

The area where screed has been placed must be weather-tight (ie. with all roofs, windows and doors covered). Draughts and strong sunlight must be avoided during the curing period or surface crazing and cracking may occur.

The screed should not be covered with polythene, as this is not necessary for curing and will only delay final drying of the screed.

Access to the screed should be restricted for at least 48 hours to prevent damage to the screed surface. Thereafter light foot traffic should be possible.

If there are any areas that require mechanical sanding to remove the surface laitance layer this should be carried out as soon as possible, usually after approximately 4 days. This will provide a dense surface to receive adhesives as well as speeding drying of the screed.

Normal site traffic and erection of non-load bearing partitions off the screed is permitted seven days after the screed is laid.

### Protection

EuroMix Flowing Screed is not intended to be a wearing surface, and must therefore be protected by suitable sheet material in areas where it may be subjected to intensive or heavy use before the final floor finish is laid.

### Drying

Screed drying time is 1mm/day up to 40mm thickness in warm and well-ventilated drying conditions. Drying times will increase for screeds thicker than 40mm and in poor drying conditions

In common with other screeds, it is very important that good drying conditions are provided. The screed should be protected from very rapid drying or draughts during the first 3 days, but thereafter air humidity should be low (ideally 65% RH or below) so that moisture can be released. Good ventilation or the use of dehumidifiers can assist in reducing the ambient humidity.

Forced drying is permitted seven days after laying of the screed. Underfloor heating should be commissioned slowly with temperature increases of no more than 10°C/day.

### Floor finishes

The screed and base should be checked to establish that the floor meets the requirements of the final flooring material.



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