

# TECHNICAL INFORMATION

## CEMSCREED 5

### Product Data Sheet No. 110/03

#### INTRODUCTION

Tarmac Cemscreed 5 is a rapid drying floor screed developed by Tarmac to fulfil the need for factory produced high performance cement:sand levelling screeds suitable for all common floor finishes. The screed is suitable for light foot traffic after 24 hours<sup>(1)</sup> and is sufficiently dry to receive most types of floor covering after 7 days<sup>(1)</sup>.

#### TYPICAL USES

Tarmac Cemscreed 5 is used to produce bonded, unbonded and floating screeds in internal situations where early foot traffic and quick drying is required e.g. to allow floor coverings, ceramic tiles and natural stone tiles to be laid with short installation times.

#### ADVANTAGES

- Accessible to light foot traffic within 24 hours<sup>(1)</sup>.
- Quick drying allowing the floor coverings to be laid after 7 days<sup>(1)</sup>.
- Can be used for the rapid repair of existing floor screeds.
- Better working properties providing easier and more reliable compaction.
- Quicker early strength development.
- Reduced drying shrinkage resulting from low water/cement ratio.
- Good resistance to construction traffic and dusting.
- Greater final strength.
- Fibres may be used to replace crack control reinforcement (D49).
- Better cement dispersion gives greater and more uniform compressive strength throughout the floor area.
- Factory mixing takes quality control away from the site and into the factory, providing consistent quality materials and accurate proportioning.

<sup>(1)</sup> At 23°C and 50% relative humidity. Tested using dried sand. All moisture testing completed using carbide method.

#### PRODUCT CONFORMITY

Tarmac factory produced screed materials conform to the requirements of BS EN 13813. Cemscreed 5 should be used in accordance with the recommendations of Codes of Practice BS 8000:Part 0/9 and BS 8204:Part 1.

#### COMPOSITION AND MANUFACTURE

Tarmac Cemscreed 5 is a thoroughly mixed accurately controlled blend of the following materials:

- Well-graded fine aggregate (sand) conforming to BS EN 12620/BS EN 13139
- Portland cement conforming to BS EN 197-1.
- Retarding/water reducing admixture conforming to BS EN 934-2/3 giving the optimum working time, normally usable for 8 – 12 hours from the time of mixing.
- Water conforming to BS EN 1008, to give the optimum semi-dry consistency for easy laying and thorough compaction.

#### DENSITY

Typical test results:

Typical Test Results	Density kg/m <sup>3</sup>
Fresh wet un-compacted	1,850 – 2,000
Compacted set and air dried	2,000 – 2,200

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The information given in this technical data sheet is based on our current knowledge and is intended to provide general notes on our products and their uses. Tarmac endeavour to ensure that the information given is accurate, but accept no liability for its use or its suitability for particular application because of the product being used by the third party without our supervision. Any existing intellectual property right must be observed.

## PERFORMANCE

### Strength

Results based on prisms made, cured and tested in accordance with the requirements of BS EN 13892-2.

Screed Designation	BS EN 13813 Compressive Strength Class	BS EN 13813 Flexural Strength Class
Cemscreed 5	C30	F3.0

**Table 1: Cemscreed 5 strength classes and minimum strength.**

These results are indicative and may be subject to change.

### Typical Hardening Times

Light foot traffic 1 day. Site traffic 3 days.

### Typical Drying Times

Allow approximately 7 days at 50mm of thickness. For thicknesses above 50mm or where the concrete base has excessive moisture content, this time should be increased. High humidity or low temperatures will also delay the drying out process. At 10oC and 70% relative humidity the typical drying time will be 14 days at 50mm thickness.

### Curing

Cemscreed 5 should be protected from damage after laying. To achieve the full performance of Tarmac Cemscreed 5 adequate curing is essential for the initial 48hrs and the screed must be covered with plastic sheeting or other suitable material to retain moisture. Whilst damping down of the surface before covering is acceptable, saturation of the screed, e.g. by prolonged hosing is not recommended. After the first 48 hours windows and doors should be opened to allow a natural airflow through the room and facilitate drying. Where possible it is strongly recommended that room's air temperature be heated to 20oC to accelerate the drying process. NOTE: Do not use hot air blowers, underfloor heating, or other means of accelerating the drying in the early life directly onto the screed's surface.

### Fire Protection

Tarmac Cemscreed 5 contains less than 1.0% organic material and is classified in accordance with BS EN 13501-1 as Class A1 without testing (Commission Directive 96/603/EC).

### Effect of Freeze Thaw

In cold conditions adequate precautions must be taken to protect from freeze thaw attack. No antifreeze or accelerating admixtures should be added to the screed material.

### Compatibility

Tarmac Cemscreed 5 is compatible with all normal building materials, but wet cementitious materials may attack certain metals e.g. aluminium.

### Durability

No problems should occur if the correct screed material has been specified, but Tarmac Cemscreed 5 is not designed as a wearing surface and should be covered with a flooring material.

## HEALTH & 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 eye thoroughly with clean water. If swallowed wash out mouth and drink plenty of water. For further information refer to Tarmac Safety Data Sheet.

## USES

Suitable for use on the following bases:

1. Solid concrete ground floor slabs:
  - a. Directly in contact with the slab (bonded).
  - b. With suitable damp proof membrane between slab and screed (unbonded)
  - c. Over insulation layer to isolate the screed from the base (floating).
2. Precast concrete units or beams with reinforcement.
3. In situ suspended floors.
4. As a topping to lightweight screeds based on perlite or other lightweight aggregates.
5. Certain other situations – refer to your nearest Local Tarmac Building Products Sales Office.

The above applications are subject to the minimum thicknesses given in the section on Construction/Sitework.

Type of Specification	Recommended Minimum Average Thickness (mm)	Minimum Thickness at any Point (mm)	Comments
Monolithic (i.e. applied within 3 hours of placing concrete)		Ideally 12-15 Not greater than 25	Thickness greater than 25mm should be avoided to minimise shrinkage stresses
Grouted to precast concrete slab cement water slurry	45	30**	Brushing of green concrete or mechanical treatment to expose aggregate recommended
Grouted to concrete planks with cement: water slurry	60	15**	Screed should be reinforced if structural movement is expected. Cement: SB Admixture slurry* may be used to ensure a better bond. Surface of units must be roughened to form a key.
Grouted to sound, rough concrete slab with cement: Tarmac SB admixture slurry*	40	25**	Brushing of green concrete or mechanical treatment to expose aggregate below 40mm
Grouted to waterproof concrete slab with cement SB admixture slurry	50	45	Aggregate must be exposed
Grouted on bitumen dpm using cement Tarmac SB Admixture slurry*	50	45	Aggregate must be exposed
Unbonded	55	50	
Applied to concrete Stairs Treads Risers		20** 12 (15 max)	Aggregate must be exposed by mechanical treatment and cement:Tarmac SB Admixture slurry* applied
Topping to lightweight screeds+	13	10	Applied to lightweight aggregate screeds e.g. Limelite Lightweight Screed. Pre-wetting of lightweight screeds may be necessary
Pipes and Conduits		25 cover	Pipes and conduits
Trunking		25 cover	Reinforced with wire mesh over and bonded to trunking with cement:Tarmac SB Admixture slurry*. Trunkings must be securely bedded and

			fixed.
Floating screed for sound insulation on 5mm polyethylene foam	55	40	Reinforced with D49 or similar unless over 55mm, slurry grout to foam insulation
Floating screed for thermal insulation on fibre quilt.	75	65	Screed reinforced with D49 or similar below 75mm
Floating screed for thermal/sound insulation on rigid board	55	50	Reinforced with D49 or similar below 60mm

\* Used according to Tarmac Product Data Sheet No. 22

+ Where used in conjunction with Limelite Lightweight Screed apply monolithically if possible. One tonne of screed material will have an approximate volume of 0.43 – 0.48 m<sup>3</sup>. Table 3 shows the coverage area per tonne for a range of thicknesses.

\*\* Consideration to the use of an epoxy based priming system where possible.

Thickness mm	Coverage Area m <sup>2</sup> /tonne (approx.)	Thickness mm	Coverage Area m <sup>2</sup> /tonne (approx.)
10	45.0	45	10.0
15	30.0	50	9.0
20	22.5	55	8.2
25	18.0	60	7.5
30	15.0	65	7.0
35	13.0	70	6.5
40	11.0	75	6.0

Table 3: Approximate coverage area of screed material

Note: Slight variations in sub-base levels will affect the coverage

## CONSTRUCTION/SITE WORK

### Site storage

Tarmac Cemscreed 5 should be tipped on to a clean banker board with a sealed base and sheeted to protect it from the elements. Do not tip new deliveries onto the remains of the previous load.

### Preparation

The base concrete must be clean and in particular free from lime, gypsum, plaster, dust, dirt, oil or grease. The base concrete should be swept to remove all loose material and wetted with clean water, where the levelling screed is to be placed in direct contact with the base. Just before laying the screed an appropriate bonding material should be brushed into the surface, care being taken that this neither forms deep pools nor dries before the screed is placed.

## APPLICATION

### Bonded Construction

(Minimum thickness 40mm)

The bond between the base and levelling screed will depend on the thoroughness with which the base has been prepared. A bonding agent such as Tarmac SB Admixture can be used to obtain a good bond. The bonding agent should be used in a slurry with cement in place of the normal cement + water slurry (3 volumes cement:2 volumes Tarmac SB Admixture) and the screed laid before the slurry dries or sets.

### Unbonded Construction

(Minimum thickness 55mm)

When no bond is possible between levelling screed and base, the screed should be at least 50mm thick, or, if containing heating pipes, a minimum of 65mm thick.

### Floating Screed

(Minimum thickness 75mm / 65mm for light loading)

A levelling screed laid on a compressible layer such as thermal or sound insulating material, should be at least 65mm thick, or if containing heating pipes, a minimum of 75mm thick. All conduits should be firmly fixed covered with suitable crack control mesh and given a minimum cover of 25mm.

Where Tarmac Cemscreed 5 is laid on thermal or sound insulation boards, which are sufficiently rigid to enable the screed to be properly compacted, the minimum thickness of Tarmac Cemscreed 5 may be reduced to 55mm.

## Topping to Lightweight Screeds

A smooth surface can be given to lightweight screeds, which will enable point loadings to be carried. The normal thickness will be of the order of 10 – 15mm and, if necessary, the suction of the lightweight screed should be controlled by wetting with clean water. Tarmac recommends Limelite Lightweight Screed

### Laying

Reference should be made to Code of Practice BS 8204-1. The material should be spread on the prepared base with adequate surcharge. It is important to compact the screed material thoroughly and evenly over the whole area, either by tamping or by mechanical means and then level with a screed board. For many floor finishes, the screed must be finished with a steel trowel to give it a smooth dense surface. For such a finish, the screed should be allowed to stiffen slightly and then worked with the trowel, which will make a ringing sound when the correction action is being used. Excessive trowelling should be avoided as this brings a layer of cement laitance to the surface where it may craze and dust. To aid compaction of thicker cement:sand levelling screeds, i.e. over 50mm thickness, the screed may be laid in two layers.

Both layers should be of approximately equal thickness and the same mix and water content.

The first layer should be thoroughly compacted using heavy tamping or a weighted roller. The second layer should be laid as soon as possible, i.e. within 2 hours, after compaction of the lower layer (monolithically). The common cause of screed failure is poor compaction.

<b>REFERENCES*</b>	
British Standards Institute	
<b>BS EN 197-1:2011</b>	Cement Part 1: Composition, specifications and conformity criteria for common cements
<b>BS 7979 : 2016</b>	Specification for limestone fines for use with Portland cement
<b>BS EN 1008:2002</b>	Mixing water for concrete – specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete
<b>BS EN 12620:2013</b>	Aggregates for concrete
<b>BS EN 13139:2002</b>	Aggregates for mortar
<b>BS EN 934</b>	Part 1: 2008 Admixtures for concrete, mortar and grout: Part 2: 2009+A1:2012 Concrete admixtures – definitions, requirements, conformity, marking and labelling Part 3: 2003+A1:2012 Admixtures for masonry mortar – definitions, requirements, conformity, marking and labelling
<b>BS 8000-0: 2014</b>	Workmanship on construction site. Introduction and general principles
<b>BS 8000-9: 2003</b>	Workmanship on building sites. Cementitious levelling screeds and wearing screeds. Code Of Practice.
<b>BS 8204</b>	Screeds bases and in situ floorings. Part 1: 2003+A1:2009 Concrete bases and cement sand levelling screeds to receive floorings – Code of Practice.
<b>BS EN 13501</b>	Fire classification of construction products and building elements Part 1: 2007 +A1:2009 Classification using test data from fire reaction tests
<b>BS EN 13813:2002</b>	Screed material and floor screeds – screed material – properties and requirements
<b>BS EN 13892</b>	Method of test for screed materials (A multipart standard) Part 2: 2002 Determination of flexural and compressive strength
<b>British Cement Association*</b>	
<b>Publication 48.46</b>	Construction Guide: Laying floor screeds
<b>Tarmac*</b>	
<b>Product Data Sheet no. 110/05</b>	Tarmac Truscreed and Truscreed HD
<b>Product Data Sheet</b>	Tarmac SB Admixture for Masonry. Screed and Rendering Applications
<b>Site Guide No. 2</b>	Tarmac Screeds, Truscreed and Truscreed HD
<b>Tarmac Safety Data Sheet</b>	Screeds

\*Current version applicable to all references