

Tilemaster Adhesives Specification

Tiling To Cemfloor Screed Screed.

Introduction:

This specification has been compiled to assist in your project when fitting tiles on to Cemfloor screeds. The report has a lot of content but all the information is relevant and will help you in completing your project.

Although drying guide times have been given in this specification, due to differences in site conditions Tilemaster Adhesives advise that all Cemfloor screeds are tested for moisture content prior to work commencing.

The underfloor heating system must be fully commissioned prior to work commencing.

Cemfloor screeds do not form surface laitance whilst drying and will allow light foot traffic after 24 hours.

If the Cemfloor screed is heated then the underfloor heating can be commissioned after 7 days and tiled once the commissioning process is complete and the screed has been allowed to cool sufficiently.

In ideal drying conditions, unheated Cemfloor screeds can be tiled after 7 days with Tilemaster's green screed adhesive – Tilemaster Ultimate.

In ideal drying conditions, unheated Cemfloor screeds can be tiled when the moisture reading is 3.5% Content by Weight, or less (approximately 21-28 days).

Commissioning Underfloor Heated Screeds

New underfloor heated screeds must be commissioned prior to fitting a flooring finish. Commission the system after the required time allowed for the screed to cure. After this period, switch on the system at the minimum temperature and leave this for 3 days. Increase the temperature by 5°C per day up to a maximum of 55°C and leave it at this temperature for 3 days, then allow to the substrate to cool sufficiently. Alternatively, in cold conditions, reduce the temperature of the screed to below 15°C prior to tiling. To commission the underfloor heating properly the flow temperature should not be limited by room thermostats. The room thermostats should be disconnected and the temperatures controlled manually via the manifold mixing valve, or at the boiler.

Moisture Testing by CM Tester (CM)

The CM tester works according to the carbide method, using the destruction of calcium carbide in water. During this reaction acetylene gas is formed which causes an increase in pressure in the vessel.

From the measured pressure and the test portion of the material to be tested, the water content of the sample is read from a table or directly from the manometer.

Moisture Testing by Hair Hygrometer (RH):

The British Standard for testing a base to receive a floor covering is to use a hair hygrometer to the method defined in BS8203: 2001. This provides a non-destructive test method and will give results for Relative Humidity near to 75% (which is the usual required limit for floor finishes). Above this level of moisture, the hair hygrometer 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.

Cemfloor Screed Preparation:

Cemfloor screeds do not necessarily need sanding or priming, however it is very probable that the screed will have been subjected to foot traffic and will have had other trades working on it after it has been installed and therefore may have subsequently been contaminated and best practice will always be to sand the surface to remove these contaminants.

Ensure the Cemfloor screed is clean and free of any contaminants, loose dust or dirt. This may mean that the screed requires sanding and vacuuming before work commences.

If the Cemfloor screed is overly porous or any traces of dust remain on the surface then the screed will need to be primed before work commences.

Tiling An Unheated Cemfloor Screed at 5.0% - 3.5% Content by Weight, Or Less (Approximately 7-21 Days)

Priming – Tilemaster Primeplus

Prime the Cemfloor screed with Tilemaster Primeplus, diluted at a 3:1 ratio with water (3 parts water to 1 part Primeplus). Allow this to become touch dry. If the substrate is overly porous then further coats of diluted Primeplus may be required.

Priming is very important as this will help stabilize the porosity of the substrate, improve the open time of Tilemaster's adhesive and improve the adhesive bond strength.

Tiling: Tilemaster Ultimate

When Tilemaster Primeplus has dried the tiling must commence using Tilemaster Ultimate Adhesive. Tilemaster Ultimate is a polymer modified, rapid setting, S2, highly flexible, cement based floor and wall tile adhesive.

Always mix powder to water and mix to a smooth, lump free consistency. As an approximate guide for powder to water ratio, 20kg of powder requires approximately 3.6 – 3.8 litres of water. Never add water after initial mixing, as this will impair the strength of the adhesive. Product that has started to set must be discarded.

Bed the tiles into the adhesive ensuring full coverage of adhesive between tile and substrate. Regular checks should be carried out to ensure that there are no hollow pockets or voids beneath the tile. Ensure the adhesive is still moist and there is full coverage when the tiles are bedded into the adhesive.

Large format tiles must be back buttered to help in achieving a solid bed of adhesive. A large format tile is defined as a tile that has any side with a nominal size of 600mm or greater.

Clean surplus adhesive from the tiles and joints as soon as possible as set adhesive will prove very difficult to remove later. Clean tools immediately after use with clean water.

Grouting: Tilemaster Grout 3000

Tilemaster Grout 3000 must be used for grouting the tiles. Do not start grouting until Tilemaster Ultimate adhesive has set. As a guide, at 20°C, Tilemaster Ultimate will set in 3 hours.

Tilemaster Grout 3000 is a cement based, flexible wall and floor grout, that can be used for joint widths of 2mm-15mm.

Tilemaster Grout 3000 should be mixed with a low speed mechanical mixer to ensure that all ingredients are fully dispersed. Mix thoroughly until a smooth, lump free consistency is achieved. After initial mixing allow the grout to stand for 2 – 3 minutes and briefly re-mix before applying. More powder can be added at this stage if required. As an approximate guide for mixing Tilemaster Grout 3000, 5kg of grout should be mixed with 1.2 -1.35 litres of water.

Once mixed Tilemaster Grout 3000 will remain workable for approximately 30 minutes at 20°C, however, this time will be extended by lower temperatures and shortened by higher temperatures. Do not add water after initial mixing as this will cause weakening of the grout and also lead to shrinkage and potential discolouration of the final grout colour.

Using a rubber squeegee or a rubber float, work the mixed Tilemaster Grout 3000 thoroughly into the joints ensuring that the joints are completely filled and void free. Excess grout should be removed as the work proceeds by moving the rubber squeegee/float diagonally across the tiles to prevent removal of the grout from the filled joints.

Any grout residue left on the surface of the tiles can be removed by wiping off with a damp cloth or sponge once the grout has started to stiffen in the joints. Any dry film can be removed by polishing off with a clean, dry cloth once the grout has hardened within the joints.

NB: When grouting using a coloured joint grout, the following instructions will help achieve a uniform finished colour:

- Do not use bags of grout from different batches on the same grout job (batch numbers are clearly displayed on Tilemaster Grout 3000 packaging).
- Never mix the grout with more water than recommended on the packaging as this could lead to the grout drying patchy.
- When removing the excess grout from the tiles, allow the grout to have stiffened in the joints.
- When removing the excess grout from the tiles, use as little water as possible to “wash off” the tiles.

All material used during the application of Tilemaster Grout 3000, such as tools and cloths/sponges must be clean and free of contaminants likely to cause staining or discolouration of the finished grout.

Tilemaster Grout 3000 will reach final set after 24 hours at 20°C and may be put into service.

Tiling An Unheated Cemfloor Screed at 3.5% Content by Weight, Or Less (Approximately 21-28 days)

Priming – Tilemaster Primeplus

Prime the Cemfloor screed with Tilemaster Primeplus, diluted at a 3:1 ratio with water (3 parts water to 1 part Primeplus). Allow this to become touch dry. If the substrate is overly porous then further coats of diluted Primeplus may be required.

Priming is very important as this will help stabilize the porosity of the substrate, improve the open time of Tilemaster’s adhesive and improve the adhesive bond strength.

Tiling: Tilemaster Magix

When Tilemaster Primeplus has dried the tiling must be completed using Tilemaster Magix adhesive. Tilemaster Magix is a polymer modified, S1 flexible, high yield, cement based wall and floor tile adhesive. Tilemaster Magix is available in white and grey, rapid and standard setting versions. The rapid setting Tilemaster Magix-R will set in approximately 3 hours and the standard setting Magix-S will set in approximately 16 hours, when used in temperatures of 20°C.

Always mix powder to water and mix to a smooth, lump free consistency. As an approximate guide for powder to water ratio, 10kg of powder requires approximately 3.8 – 4.2 litres of water. Never add water after initial mixing, as this will impair the strength of the adhesive. Product that has started to set must be discarded.

Tilemaster Magix should not be used in temperatures of less than 5°C or more than 30°C.

Bed the tiles into the adhesive ensuring full coverage of adhesive between the tile and substrate. Regular checks should be carried out to ensure that there are no hollow pockets or voids beneath the tile. Ensure the adhesive is still moist and there is full coverage when the tiles are bedded into the adhesive.

Large format tiles must be back buttered to help in achieving a solid bed of adhesive. A large format tile is defined as a tile that has any side with a nominal size of 600mm or greater.

Clean surplus adhesive from the tiles and joints as soon as possible, as set adhesive will prove very difficult to remove later. Clean tools immediately after use with clean water.

OR

Tiling: Setaflex

Once Tilemaster Primeplus has dried the tiling must be completed using Tilemaster Setaflex Adhesive. Tilemaster Setaflex is a polymer modified, S1 flexible, cement based tile adhesive, that is available in rapid, semi-rapid and standard setting formulations, giving approximate setting times of 3 hours, 6 hours and 24 hours respectively when used in temperatures of 20°C.

Always mix powder to water and mix to a smooth, lump free consistency. As an approximate guide for powder to water ratio, 20kg of powder requires approximately 4.4 – 4.6 litres of water. Never add water after initial mixing, as this will impair the strength of the adhesive. Product that has started to set must be discarded.

Tilemaster Setaflex should not be used in temperatures of less than 5°C or more than 30°C.

Bed the tiles into the adhesive ensuring full coverage of adhesive between the tile and substrate. Regular checks should be carried out to ensure that there are no hollow pockets or voids beneath the tile. Ensure the adhesive is still moist and there is full coverage when the tiles are bedded into the adhesive.

Large format tiles must be back buttered to help in achieving a solid bed of adhesive. A large format tile is defined as a tile that has any side with a nominal size of 600mm or greater.

Clean surplus adhesive from the tiles and joints as soon as possible, as set adhesive will prove very difficult to remove later. Clean tools immediately after use with clean water.

Grouting: Tilemaster Grout 3000.

Tilemaster Grout 3000 must be used for grouting the tiles. Do not start grouting until Tilemaster Magix or Setaflex adhesive has set. As a guide, at 20°C, Tilemaster Magix-R will set in 3 hours and Magix-S in 16 hours, Tilemaster Rapid Setaflex in 3 hours, Semi-Rapid Setaflex in 6 hours and Standard Set Setaflex in 24 hours.

Tilemaster Grout 3000 is a cement based, flexible wall and floor grout, that can be used for joint widths of 2mm-15mm.

Tilemaster Grout 3000 should be mixed with a low speed mechanical mixer to ensure that all ingredients are fully dispersed. Mix thoroughly until a smooth, lump free consistency is achieved. After initial mixing allow the grout to stand for 2 – 3 minutes and briefly re-mix before applying. More powder can be added at this stage if required. As an approximate guide for mixing Tilemaster Grout 3000, 5kg of grout should be mixed with 1.2 -1.35 litres of water.

Once mixed Tilemaster Grout 3000 will remain workable for approximately 30 minutes at 20°C, however, this time will be extended by lower temperatures and shortened by higher temperatures. Do not add water after initial mixing as this will cause weakening of the grout and also lead to shrinkage and potential discolouration of the final grout colour.

Using a rubber squeegee or a rubber float, work the mixed Tilemaster Grout 3000 thoroughly into the joints ensuring that the joints are completely filled and void free. Excess grout should be removed as the work proceeds by moving the rubber squeegee/float diagonally across the tiles to prevent removal of the grout from the filled joints.

Any grout residue left on the surface of the tiles can be removed by wiping off with a damp cloth or sponge once the grout has started to stiffen in the joints. Any dry film can be removed by polishing off with a clean, dry cloth once the grout has hardened within the joints.

NB: When grouting using a coloured joint grout, the following instructions will help achieve a uniform finished colour:

- Do not use bags of grout from different batches on the same grout job (batch numbers are clearly displayed on Tilemaster Grout 3000 packaging).
- Never mix the grout with more water than recommended on the packaging as this could lead to the grout drying patchy.
- When removing the excess grout from the tiles, allow the grout to have stiffened in the joints.
- When removing the excess grout from the tiles, use as little water as possible to “wash off” the tiles.

All material used during the application of Tilemaster Grout 3000, such as tools and cloths/sponges must be clean and free of contaminants likely to cause staining or discolouration of the finished grout.

Tilemaster Grout 3000 will reach final set after 24 hours at 20°C and may be put into service.

Tiling A Heated Cemfloor Screed (After 8 Days & Heating System Commissioning)

Priming – Tilemaster Primeplus

Prime the Cemfloor screed with Tilemaster Primeplus, diluted at a 3:1 ratio with water (3 parts water to 1 part Primeplus). Allow this to become touch dry. If the substrate is overly porous then further coats of diluted Primeplus may be required.

Priming is very important as this will help stabilize the porosity of the substrate, improve the open time of Tilemaster's adhesive and improve the adhesive bond strength.

Tiling: Tilemaster Magix

When Tilemaster Primeplus has dried the tiling must be completed using Tilemaster Magix adhesive. Tilemaster Magix is a polymer modified, S1 flexible, high yield, cement based wall and floor tile adhesive. Tilemaster Magix is available in white and grey, rapid and standard setting versions. The rapid setting Tilemaster Magix-R will set in approximately 3 hours and the standard setting Magix-S will set in approximately 16 hours, when used in temperatures of 20°C.

Always mix powder to water and mix to a smooth, lump free consistency. As an approximate guide for powder to water ratio, 10kg of powder requires approximately 3.8 – 4.2 litres of water. Never add water after initial mixing, as this will impair the strength of the adhesive. Product that has started to set must be discarded.

Tilemaster Magix should not be used in temperatures of less than 5°C or more than 30°C.

Bed the tiles into the adhesive ensuring full coverage of adhesive between the tile and substrate. Regular checks should be carried out to ensure that there are no hollow pockets or voids beneath the tile. Ensure the adhesive is still moist and there is full coverage when the tiles are bedded into the adhesive.

Large format tiles must be back buttered to help in achieving a solid bed of adhesive. A large format tile is defined as a tile that has any side with a nominal size of 600mm or greater.

Clean surplus adhesive from the tiles and joints as soon as possible, as set adhesive will prove very difficult to remove later. Clean tools immediately after use with clean water.

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Tiling: Setaflex

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Always mix powder to water and mix to a smooth, lump free consistency. As an approximate guide for powder to water ratio, 20kg of powder requires approximately 4.4 – 4.6 litres of water. Never add water after initial mixing, as this will impair the strength of the adhesive. Product that has started to set must be discarded.

Tilemaster Setaflex should not be used in temperatures of less than 5°C or more than 30°C.

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Once mixed Tilemaster Grout 3000 will remain workable for approximately 30 minutes at 20°C, however, this time will be extended by lower temperatures and shortened by higher temperatures.

Do not add water after initial mixing as this will cause weakening of the grout and also lead to shrinkage and potential discolouration of the final grout colour.

Using a rubber squeegee or a rubber float, work the mixed Tilemaster Grout 3000 thoroughly into the joints ensuring that the joints are completely filled and void free. Excess grout should be removed as the work proceeds by moving the rubber squeegee/float diagonally across the tiles to prevent removal of the grout from the filled joints.

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Tilemaster Grout 3000 will reach final set after 24 hours at 20°C and may be put into service.

General:

Tilemaster Adhesives' products should always be applied in accordance with the relevant technical data sheet. The information supplied in this specification is given on results obtained from long experience and extensive field and laboratory testing and is given in good faith. It is to the best of our knowledge true and accurate; however, it may contain information which is inappropriate under certain conditions of use.

The company cannot accept responsibility for any loss or damage due to inappropriate use or the possibility of variations of working conditions and of workmanship outside of our control. Users should undertake their own tests to determine the applicability of the products for their own particular use. These specifications are guidelines only and reference should be made to the relevant British Standard (generally BS 5385 covers most points) prior to commencement of works.

Commissioning Underfloor Heated Screeds:

New underfloor heated screeds must be commissioned prior to fitting a flooring finish. Commission the system after the required time allowed for the screed to cure. After this period, switch on the system at the minimum temperature and leave this for 3 days. Increase the temperature by 5°C per day up to a maximum of 55°C and leave it at this temperature for 3 days, then allow to the substrate to cool sufficiently. Alternatively, in cold conditions, reduce the temperature of the screed to below 15°C prior to tiling. To commission the underfloor heating properly the flow temperature should not be limited by room thermostats. The room thermostats should be disconnected and the temperatures controlled manually via the manifold mixing valve, or at the boiler.

Turning on the Underfloor Heating System:

Once tiling and grouting has been completed, allow 7 days before turning on the underfloor heating system. When turning on the heating, start at the lowest temperature possible and then gradually increase the temperature of the system by no more than 2°C per day until the required temperature is achieved.

Moisture Testing by CM Tester (CM)

The CM tester works according to the carbide method, using the destruction of calcium carbide in water. During this reaction acetylene gas is formed which causes an increase in pressure in the vessel. From the measured pressure and the test portion of the material to be tested, the water content of the sample is read from a table or directly from the manometer.

Moisture Testing by Hair Hygrometer (RH):

The British Standard for testing a base to receive a floor covering is to use a hair hygrometer to the method defined in BS8203: 2001. This provides a non-destructive test method and will give results for Relative Humidity near to 75% (which is the usual required limit for floor finishes). Above this level of moisture, the hair hygrometer 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.

Temperatures:

Products must not be applied when the material, substrate or ambient temperature is below 5°C. Doing so will significantly affect the setting times, performance and future integrity of the products. At

temperatures in excess of 30°C it is likely that setting times will be accelerated to such a level that the material becomes very difficult to use.

Movement Joints:

These must be incorporated into the tiling installation as stated in BS5385. BS 5385-4 advises that stresses may develop within the tiling system as a result of movements due to such factors as drying shrinkage and moisture movements in the background and thermal and moisture changes in the tiling. These stresses, if not properly controlled, can be sufficient to cause loss of adhesion and bulging or cracking of the tiling, sometimes with dramatic effect.

There are two basic types of movement joints in floors: structural: and non-structural joints. A structural joint passes through the tile, bed and floor slab. A non-structural joint passes through the tile and bed only and does not penetrate the floor slab.

Structural joints in the screed and tiles should always align with the joints in the floor slab. The joints need to be of sufficient width to allow the sealant to accommodate the expected movement.

The need for non-structural joints around the extreme edges of the floor and others dividing the floors into bays will depend upon the floor dimensions, the screed, or the bedding system and the tile type.

Movement joints should be inserted where the tiling abuts restraining surfaces such as perimeter walls, columns, curbs, steps and plant fixed to the base. In floors with dimensions of 2m or less between restraining surfaces, perimeter joints are not necessary unless the conditions that can generate stresses are likely to be extreme, for example, violent temperature changes or prolonged immersion in liquid.

Flexible joints should be inserted:

- a) Over supporting walls and beams at intermediate positions to accommodate deflection of the base and movements in the flooring;
- b) At floor perimeters and to divide the floor into bays of size not greater than 10m by 10m. Wherever possible they should coincide with structural features e.g. columns and door openings, or they can be planned to provide a decorative paneled effect. NB: Where the substrate includes an underfloor heated system, the floor should be divided into bays not greater than 40 square metres with intermediate joints not greater than 8 linear metres.
- c) Where tiling is continuous across junctions of different background materials e.g. from screed to timber flooring. 6mm Perimeter movement joints should be inserted where the tiling abuts restraining surfaces such as perimeter walls, columns, curbs, steps and plant fixed to the base.
- d) In floors with dimensions of 2m or less between restraining surfaces, perimeter joints are not necessary unless the conditions that can generate stresses are likely to be extreme, for example, violent temperature changes or prolonged immersion in liquid.



For further information contact Tilemaster Adhesives Technical Department on: **01772 456831** or email: **technical@tilemasteradhesives.co.uk**

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