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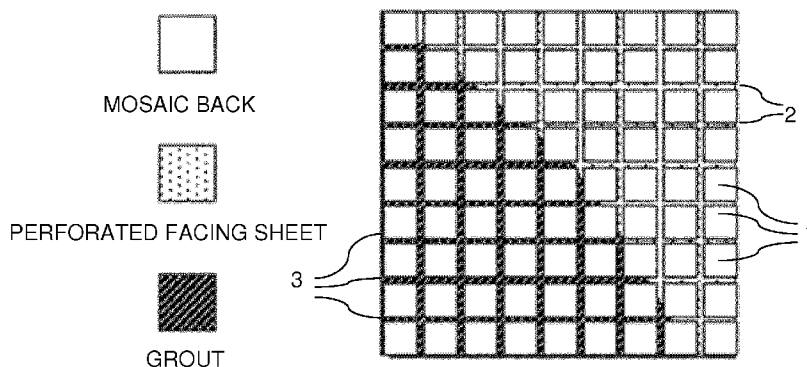


FIG. 1

(57) Abstract: A sheeted mosaic for fixing on a substrate, comprising a sheet (1) having a first side adhered to the mosaic (2) on a face side of the mosaic. The sheet allows passage of moisture and/or air from the first side to a second side of sheet. The sheet preferably includes a plurality of perforations therein. A laminate for producing such a sheeted mosaic and a method of sheeting using the laminate are provided. A method of applying a sheeted mosaic to a substrate (5) using a fixing material (4) requiring curing, wherein the sheeted mosaic comprises a sheet (1) and an adhesive material adhering the sheet to a face side of the mosaic, the method comprising adhering a back side of the mosaic to a substrate using the fixing material, and peeling the sheet from the face side before the fixing material has cured. A sheeted mosaic for use in such a method and a laminate for sheeting such a mosaic.

LAMINATE FOR SHEETING MOSAICS, SHEETED MOSAICS, METHOD OF
SHEETING A MOSAIC, AND METHODS OF APPLICATION

The invention relates to a laminate for use in producing a sheeted mosaic. The invention
5 also relates to a sheeted mosaic, a method of sheeting a mosaic, and a method of applying
a sheeted mosaic to a substrate.

The term “mosaic” refers to an assemblage of small pieces. In order to produce a mosaic
that does not have to be installed piece by piece, the mosaic can be pre-set in a number of
10 ways by manufacturers and craftsmen. The term “tessera(e)” refers to an individual
piece(s) that form a mosaic. The tesserae may be of a consistent or mixed type in colour,
shape, size or material, giving a plain, patterned, variegated or other effect to the mosaic.
The tesserae can range from large tiles to small hand-cut pieces. Pre-setting can be done
industrially to produce in bulk sheeted mosaics ready to be applied to a substrate. Pre-
15 setting can also be used by manufacturers, craftsmen, etc, to prepare mosaic art works,
murals, features and other forms of mosaic specialist work.

Tesserae may be pre-set by adhering on a face side thereof a sheet with a tack adhesive,
thereby to form a sheeted mosaic. UK patent no. GB2233285, the disclosure of which is
20 herein incorporated by reference, describes use of a self-adhesive, temporary sheet which
is translucent or transparent. Thus the design formed by the tesserae can usefully be seen
through the translucent or transparent sheet. The mosaic can be installed in a fixing bed
and the translucent or transparent sheet peeled away after the fixing bed has cured.

25 The fixing bed may be thick or thin screeds, renders (or stucco), tile adhesives or other
glues or cement-based materials. To cure, many of these require evaporation of moisture
into the air. Although some tile adhesives are hydroscopic, that is, absorb moisture
therein, and not air curing, tile adhesives do not usually indicate whether they are
hydroscopic or rely on evaporation for curing.

30 The sheet, which may be plastic, prevents moisture escaping from the fixing bed. If the
substrate surface is substantially impervious and/or the ambient temperature is low, the

fixing bed may never cure or take far longer than normal.

Grout may be applied in spaces between tesserae. This may be done from the back of the tesserae while the tesserae are adhered on the sheet and prior to the sheet being installed.

- 5 This is referred to as “pre-grouting”. Pre-grouting may be done, for example, to allow installation of a grouted sheeted mosaic onto a fixing bed in a single step process, and/or to provide a grout of different tone and/or colour than the tone and/or colour of the material of the fixing bed. Also pre-grouting prevents the material of the fixing bed from filling the spaces between the tesserae when fixed. Furthermore, where grouting is
- 10 desired, pre-grouting may be preferred to over grouting, particularly if the mosaic surface is sensitive to grout, or is pitted or textured, which makes cleaning of the mosaic surface after over grouting difficult or impossible.

- Trapping of moisture from curing of pre-applied grout, or from both pre-applied grout
- 15 and the fixing bed, or from the fixing bed where there is no pre-grouting, may problematically impede or prevent curing of the grout and/or of the fixing bed.

- Another problem is that air bubbles may be trapped between the sheet and the facing side of tesserae when the sheet is applied. This may result in tesserae coming loose from the
- 20 sheet before the sheeted mosaic is applied to a substrate.

- Also, when placed onto a fixing bed, the sheet cannot be removed for a curing period without pulling away some or all tesserae adhered to it, since the bond between the sheet and the mosaic during curing is stronger than the bond between the mosaic and the fixing
- 25 bed. This is a problem when work has to be carried out quickly.

Further, air pockets may be created during pre-grouting, which can disadvantageously leave voids in the grout.

- 30 It is an object of the present invention to address some or all of the above mentioned problems.

According to a first aspect of the present invention, there is provided a sheeted mosaic for fixing on a substrate, comprising a sheet having a first side adhered to the mosaic over a face side of the mosaic, wherein the sheet allows passage of moisture and/or air from the first side to a second side of the sheet.

5

This addresses one or more of the aforementioned problems. For example, advantageously, trapped moisture and/or air may escape so that curing of grout and/or material of a fixing bed may not be prevented or impeded. Also by way of example, formation of air pockets between the sheet and the faces of the tesserae, or in the grout may be reduced or prevented. Preferably, the sheet is such that passage of moisture and/or air from the first side to the second side occurs so that fixing material and/or grout located between the substrate and the sheet cures faster than if the sheet did not allow such passage. Preferably, the sheet is such that the passage of moisture and/or air from the first side to the second side occurs at a sufficient rate to allow fixing material and/or grout located between the substrate and the sheet to cure at a substantially the rate at which the fixing material and/or grout would cure if the sheet were not present.

The sheet may include at least one perforation therein overlying the mosaic, preferably a plurality of perforations. The perforations may be arranged in the sheet over spaces between tesserae forming the mosaic. Preferably, the perforations are sized so that passage of air and/or moisture occurs as a sufficient rate to allow fixing material and/or grout to cure at a substantially the rate at which the fixing material and/or grout would cure if the sheet were not present. Preferably the perforations are also sized to prevent or hinder voids forming in grout.

25

Additionally or alternatively, the perforations may be arranged in the sheet over face sides of tesserae forming the mosaic. Preferably, the perforations are sized so that passage of air and/or moisture occurs as a sufficient rate to prevent air pockets forming between the sheet material and the face sides of the tesserae during sheeting.

30

The sheet may be transparent or translucent. In this case, the face side of the mosaic is visible. The sheet may have information printed thereon. For example, sheeting instructions may be included.

- 5 The sheet may be formed of a plastics material, for example a plastics film. Such materials are inexpensive and may be conveniently provided in a sheet or roll form.

According to a second aspect of the present invention, there is provided a laminate for use in producing a sheeted mosaic as described above, the laminate comprising a sheet with
10 an adhesive layer on a first side of the sheet, for adhering a first side to a face side of the mosaic, allowing passage of moisture and/or air from the first side to a second side of the sheet when adhered to the mosaic.

The laminate may include at least one perforation therein for overlying the face side.
15

The laminate may further comprise a release layer over said adhesive layer, wherein the laminate allows passage of moisture and/or air from the first side to the second side of the sheet when the release layer has been removed.

- 20 According to a third aspect of the present invention, there is provided a method of sheeting a mosaic, comprising adhering a sheet allowing passage of moisture and/or air from a first side thereof to a second side thereof to a face side of the mosaic.

The sheet may have at least one perforation therein, preferably a plurality of perforations.

- 25 The method may comprise sheeting the mosaic using the laminate described above.

The sheeted mosaic described above may be made in accordance with these methods.

- There may be provided a method of applying a mosaic to a substrate, comprising sheeting
30 the mosaic in accordance with the method of the third aspect, fixing the sheeted mosaic to the substrate using fixing material, and removing the sheet.

The method may further comprise pre-grouting the mosaic.

According to a fourth aspect of the present invention, there is provided a method of applying a sheeted mosaic to a substrate using a fixing material requiring curing, wherein
5 the sheeted mosaic comprises a sheet and an adhesive material adhering the sheet to a face side of the mosaic, the method comprising adhering a back side of the mosaic to the substrate using the fixing material, and peeling the sheet from the face side before the fixing material has cured.

10 This addresses some or all of the problems mentioned above. For example, tesserae will not be dislodged or displaced if the sheet is removed before the fixing material has fully cured. Removal of the sheet before the fixing material is fully cured may allow better curing, since moisture will be allowed to escape. Also, the position of tiles may be individually adjusted.

15

According to a fifth aspect of the present invention, there is provided a sheeted mosaic for adhering to a substrate using a fixing material that requires curing, the sheeted mosaic comprising a sheet and an adhesive material adhering the sheet to a face side of the mosaic, wherein the adhesive material is such that the sheet can be peeled from the face
20 side of the mosaic before the fixing material has cured.

According to a sixth aspect of the present invention, there is provided a laminate for use in producing such a sheeted mosaic, the laminate comprising a sheet with an adhesive material thereon for adhering to the mosaic on a face side thereof, wherein the adhesive
25 material is such that the sheet can be peeled from the face side of the mosaic before the fixing material for adhering a back side of the mosaic to a substrate has cured.

Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

30 Figure 1 is a schematic underneath view of a sheeted mosaic in accordance with an embodiment, wherein the sheeted mosaic is partially pre-grouted; and

Figure 2 is a schematic cross-sectional view of the sheeted mosaic located in a fixing bed on a substrate.

Like parts are denoted by like reference numerals throughout.

5

In Figure 1 a sheeted mosaic consists of a sheet 1 in the form of a plastic film adhered by an adhesive layer (not shown) to a face side of each of a plurality of tesserae 2. The adhesive layer adheres the tesserae 2 to the sheet 1 such that the tesserae do not come loose when the sheeted mosaic is fixed in fixing bed and the sheet 1 can be peeled away
10 after the mosaic is in the fixing bed. Although inessential, the sheet is preferably sufficiently rigid as to provide support for the mosaic. The sheet 1 has a plurality of perforations therein.

The tesserae may be pieces of natural or manufactured material, typically up to 10 cm in
15 longest dimension. They may be of regular or irregular shape. They may be formed of stone, ceramic, porcelain, glass or other natural or composite processed or manufactured materials. Each tesserae is usually from 20mm by 20mm to 30mm to 30mm.

The perforations are spaced in the sheet 1 so that when the sheet 1 is adhered to the
20 mosaic, at least one perforation is located over a face side of substantially each of the tesserae and so that there are perforations over spaces between the tesserae. In an example, each perforation is approximately 1mm in diameter and perforations are approximately 2mm apart. In another example for use with tesserae of 24mm by 24mm, the hole is only 0.5mm in diameter and the perforations are about 2mm apart. The
25 perforations may conveniently be arranged in a staggered row manner. The sheet may be formed of suitable materials other than a plastic film.

Each perforation consists of a hole through the sheet 1. Embodiments are not limited to any particular way in which the perforations are formed.

30

The sheeted mosaic is partially pre-grouted such that there is grout 3 located between some of the tesserae. The holes or perforations through the sheet are sufficiently small in

size as to prevent significant penetration of grout through the sheet.

The sheeted, pre-grouted mosaic can be fixed to a substrate using a fixing bed, also referred to as “fixing material”. The fixing bed may be, for example, thick or thin
5 screeds, renders (or stucco), tile adhesives or other glues or cement-based materials. The invention is not limited to use of any particular material as the fixing bed or fixing material.

In Figure 2, the sheeted mosaic is embedded in such a fixing bed 4 located on a substrate
10 5. In this case, the sheeted mosaic is not pre-grouted.

The arrows indicated at 6 in Figure 2 indicate the direction of passage of moisture from between the sheet 1 and the fixing bed 4.

15 The sheet 1 is provided as part of a laminate. The laminate may be provided in the form of a roll or a strip for cutting to size, or in a sheet form. The laminate includes the sheet 1 and the adhesive layer and a release paper (not shown) over the adhesive layer. The laminate may be manufactured in accordance with techniques known to persons skilled in the art of laminate manufacture. For example, steps in manufacture of the sheet 1 may be
20 include passing the sheet 1 between rotary die cutters adapted to pierce holes in the sheet 1.

Preferably, the holes in the sheet 1 are spaced to suit different sizes of tesserae, that is, so that the same sheet can be used with tesserae of different sizes. The holes/perforations
25 may comprise 20% to 50% of the area of the sheet 1 that the covers the tesserae, preferably 40% to 50%. The sheet 1 is preferably sufficiently strong in view of the adhesive that adheres the sheet to the tesserae that the sheet 1 can be peeled off without tearing.

30 In use, the release paper, if any is present, is removed and the sheet 1 is adhered to the mosaic on the face side thereof. The tesserae are prepared to enable the sheet 1 to be adhered. Alternatively, it is possible that the tesserae may be individually adhered to the

sheet. Perforations over the face side of the tesserae may impede or prevent air bubbles forming when the sheet 1 is applied.

If the sheeted mosaic is to be pre-grouted as in the example of Figure 1, the next step is to apply the grout. The pre-grouted sheeted mosaic is then applied to a fixing bed. This may be done after the grout has cured or before the grout has fully cured.

If the sheeted mosaic is not to be pre-grouted, the sheeted mosaic is then applied to a fixing bed 4, as in the example of Figure 2.

In each case the fixing bed is allowed to cure and the sheet 1 is then peeled away. Where the mosaic is not pre-grouted, grout may then be applied.

Embodiments of the invention are not limited to including a sheet having perforations therein. At least some advantages of the invention may be achieved by a sheet that allows passage of moisture and/or air from a first side of the sheet (which adheres to the faces of the tesserae) to a second side of the sheet, but does not have perforations. Various materials exist that allow passage of air through them, and/or moisture, without need for perforations for example Gore-tex (RTM).

Curing rate for grout and the fixing bed depends on many factors, for example, the type of material used, the ambient temperature, humidity, the type of material of which the substrate is composed. It will be appreciated that the sheet, with or without perforations, allows passage of air and/or moisture to a sufficient extent so that curing typically occurs substantially faster than it would if the sheet did not allow such passage. It may be necessary to arrange the adhesive and/or the size the perforations so that the adhesive does not interfere with such passage. In general, where the sheet includes perforations, the perforations should be sized to allow passage of moisture and/or air so that curing occurs substantially faster than if the sheet were not perforated, from the perspective of a person applying a mosaic.

In another embodiment, which includes the sheeted mosaic with perforations in the sheet as described above, or a sheeted mosaic without perforations which allows air and/or moisture transmission or does not allow air and/or moisture transmission, the adhesive layer is such as to adhere the face side of the tesserae 2 to the sheet 1 less strongly than the fixing bed 4 adheres to the tesserae 2 when or soon after the sheeted mosaic is installed in the fixing bed 4, before the fixing bed 4 has cured. This is termed a “positive bond differential”.

The sheeted mosaic may be used and provided like in the embodiments described above. Advantageously however, the sheet 1 can be peeled from the face side of the tesserae before the fixing bed 4 has cured or substantially fully cured.

In this case, the fixing bed may be still moist yet the tesserae will not have been dislodged or displaced. The position of individual tiles may be adjusted after the tesserae 2 have been applied to the substrate 4. Additionally, the fixing bed may cure without trapping of moisture.

Optionally, in accordance with any of the embodiments described above, the sheet 1 is such that information may be printed on it. The sheet may include information, for example installation instructions, printed thereon.

It will be apparent to a person skilled in the art that various modifications can be made to the embodiments.

The applicant hereby discloses in isolation each individual feature or step described herein and any combination of two or more such features or steps, to the extent that such features or steps or combinations of features and/or steps are capable of being carried out based on the present specification as a whole in the light of the common general knowledge of a person skilled in the art, irrespective of whether such features or steps or combinations of features and/or steps solve any problems disclosed herein, and without limitation to the scope of the claims. The applicant indicates that aspects of the present invention may consist of any such individual feature or step or combination of features

and/or steps. In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention.

CLAIMS

1. A sheeted mosaic for fixing on a substrate, comprising a sheet having a first side adhered to the mosaic on a face side of the mosaic, wherein the sheet allows passage of moisture and/or air from the first side to a second side of the sheet.
5
2. A sheeted mosaic according to claim 1, wherein the sheet includes at least one perforation therein overlying the face side.
- 10 3. A sheeted mosaic according to claim 2, wherein the sheet includes a plurality of perforations therein.
4. A sheeted mosaic according to claim 3, wherein the perforations are arranged in the sheet at least over spaces between tesserae forming the mosaic.
15
5. A sheeted mosaic according to claim 3 or claim 4, wherein the perforations are arranged in the sheet at least over face sides of tesserae forming the mosaic.
6. A sheeted mosaic according to any one of the preceding claims, wherein the sheet
20 is transparent or translucent.
7. A sheeted mosaic according to any one of the preceding claims, wherein the sheet has information printed thereon.
- 25 8. A sheeted mosaic according to any one of the preceding claims, wherein the sheet is formed of a plastics material.
9. A laminate for producing a sheeted mosaic according to any one of the preceding claims, the laminate comprising a sheet with an adhesive layer on a first side of the sheet,
30 for adhering to the mosaic on a face side of the mosaic, the laminate allowing passage of moisture and/or air from the first side to a second side of sheet when adhered to the mosaic.

10. A laminate according to claim 9, wherein the sheet includes at least one perforation therein.

11. A laminate according to claim 10, further comprising a release layer over said adhesive layer, wherein the laminate allows passage of moisture and/or air from the first side to the second side of sheet when the release layer has been removed.

12. A method of sheeting a mosaic, comprising adhering a first side of a sheet allowing passage of moisture and/or air from the first side thereof to a second side thereof, to a face side of a mosaic.

13. A method according to claim 12, comprising sheeting the mosaic using the laminate of any one of claims 9 to 11.

14. A method of applying a mosaic to a substrate, comprising:
sheeting the mosaic in accordance with the method of claim 12 or claim 13;
fixing the sheeted mosaic to the substrate using fixing material; and
removing the sheet.

15. A method according to claim 14, further comprising pre-grouting the mosaic.

16. A sheeted mosaic according to any one of claims 1 to 8, wherein the mosaic is sheeted in accordance with the method of claim 12 or claim 13.

17. A method of applying a sheeted mosaic to a substrate using a fixing material requiring curing, wherein the sheeted mosaic comprises a sheet and an adhesive material adhering the sheet to a face side of the mosaic, the method comprising:

adhering a back side of the sheeted mosaic to the substrate using the fixing material; and

peeling the sheet from the face side before the fixing material has cured.

18. A sheeted mosaic for adhering to a substrate using a fixing material that requires curing, the sheeted mosaic comprising a sheet and an adhesive material adhering the sheet to a face side of the mosaic, wherein the adhesive material is such that the sheet can be peeled from the face side of the mosaic before the fixing material has cured.

5

19. A laminate for use in producing a sheeted mosaic according to claim 18, the laminate comprising a sheet with an adhesive material thereon for adhering to the mosaic on a face side thereof, wherein the adhesive material is such that the sheet can be peeled from the face side of the mosaic before the fixing material for adhering a back side of the
10 mosaic to a substrate has cured.

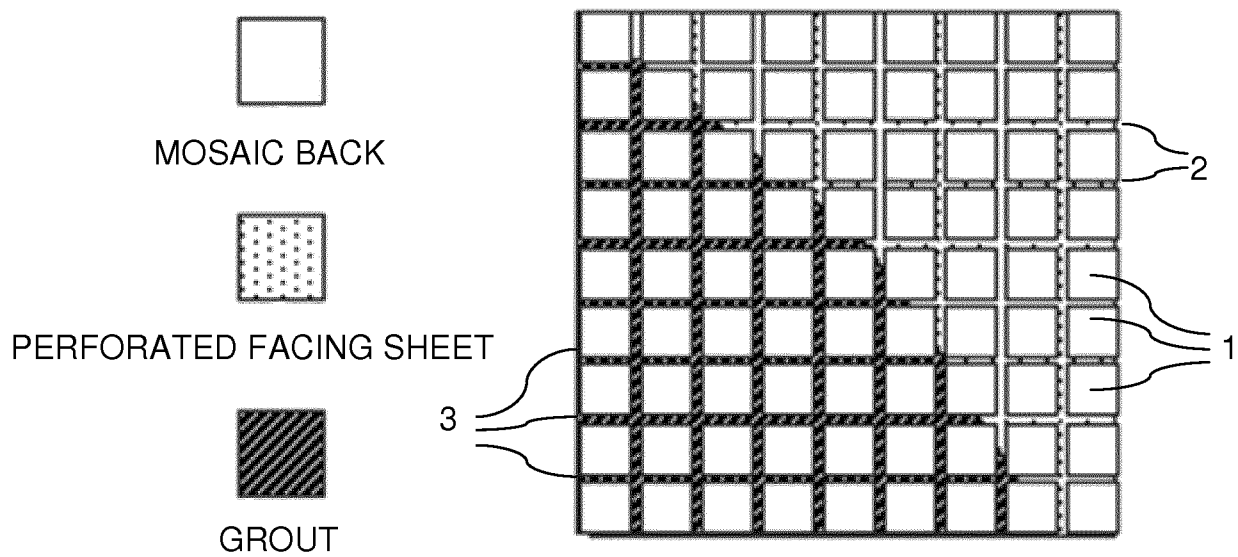


FIG. 1

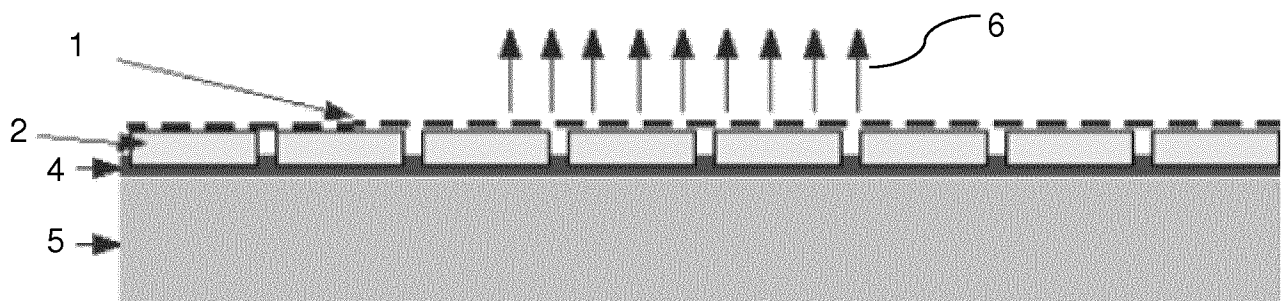


FIG. 2