

(21) Application No: 0900863.2
(22) Date of Filing: 19.01.2009

(51) INT CL: E04D 1/30 (2006.01) E04D 13/18 (2006.01)

(56) Documents Cited: EP 0195837 A FR 002475096 A
JP 030653241 B2 US 4120132 A
US 20090007517 A US 20020011043 A

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(58) Field of Search: INT CL E04D, H01L
Other: WPI & EPODOC

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(54) Title of the Invention: Roof tiles
Abstract Title: Roof tile with different edge thicknesses and lengths

(57) A roof tile has side edges having different thicknesses 42, 44 and interlocking features 32, 34 for engagement with adjacent thick solar tiles and conventional tiles when positioned on a roof. A roof tile having side edges of different lengths is also claimed. The transition between different lengths and thicknesses may be provided by a curved or preferably S-shaped transition portion between adjacent linear portions (fig 6). The interlocking edges preferably comprise two parallel ribs 52 which cooperate with two parallel channels 54. in use, the ribs are preferably positioned on the uppermost side of the left edge, with the channels preferably on the lowermost side of the right edge. An integral clip may also be provided on the bottom face of the tile for engagement with an adjacent tile (84, fig 4). In use the roof tile provides a transition between thick, long solar tiles and conventional tiles having a wedge shape defined by a thick top-edge and a thin bottom-edge.

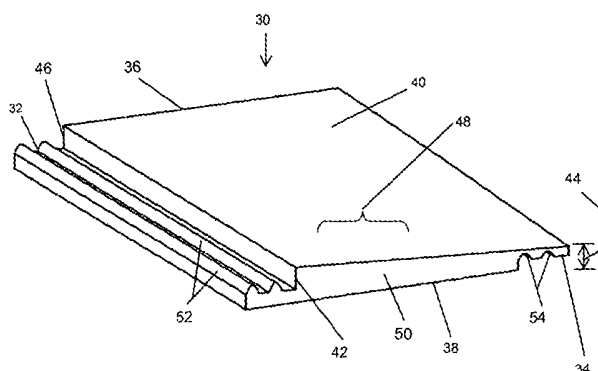


Figure 2

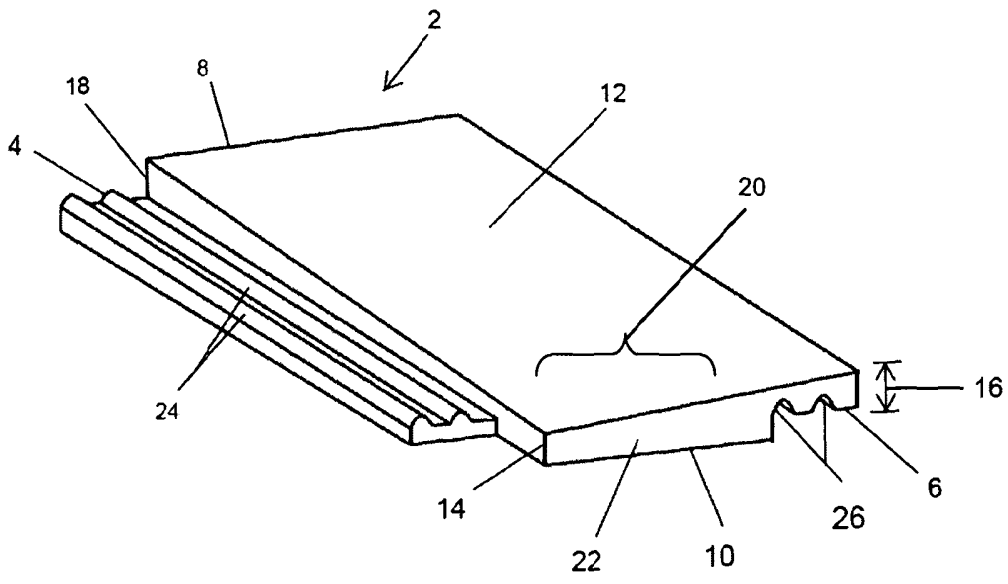


Figure 1

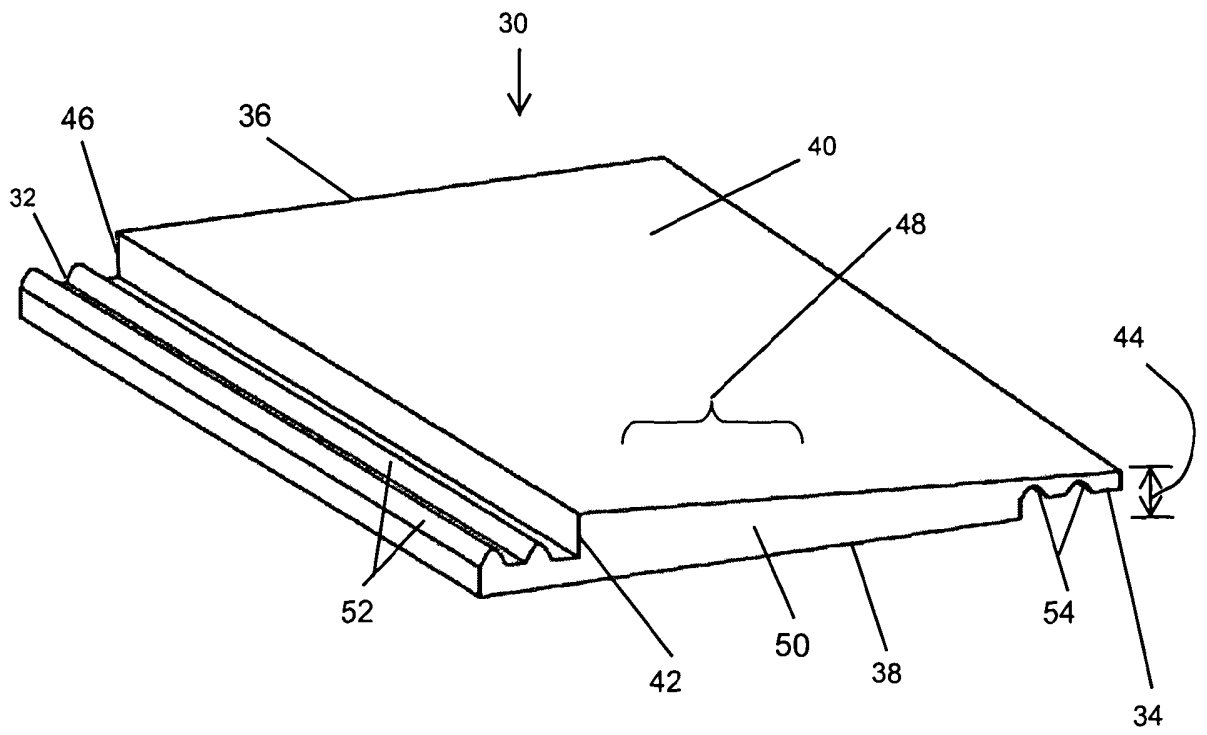


Figure 2

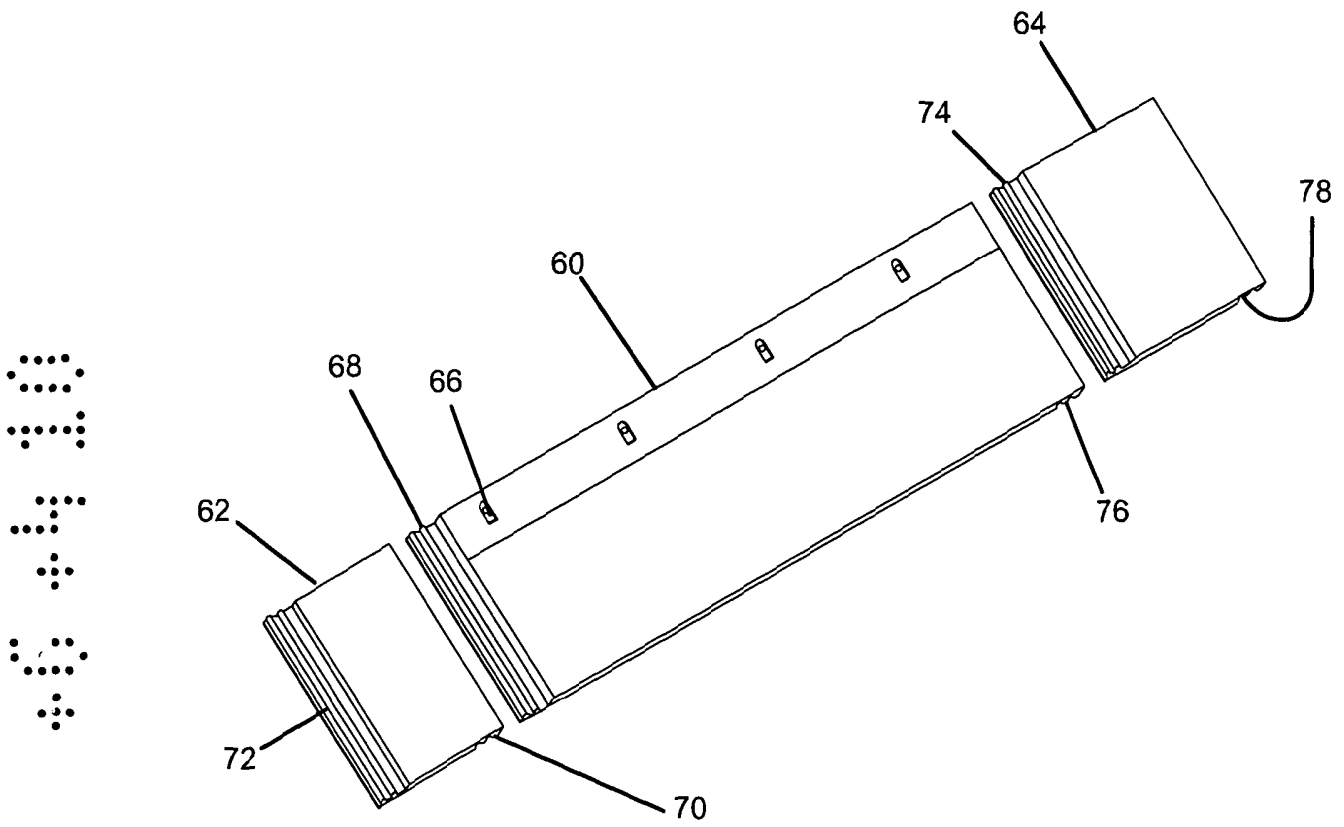


Figure 3

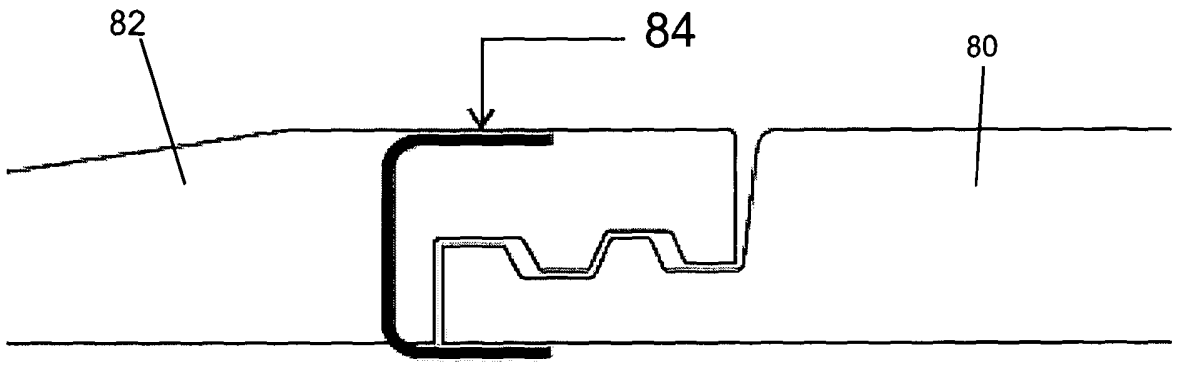


Figure 4

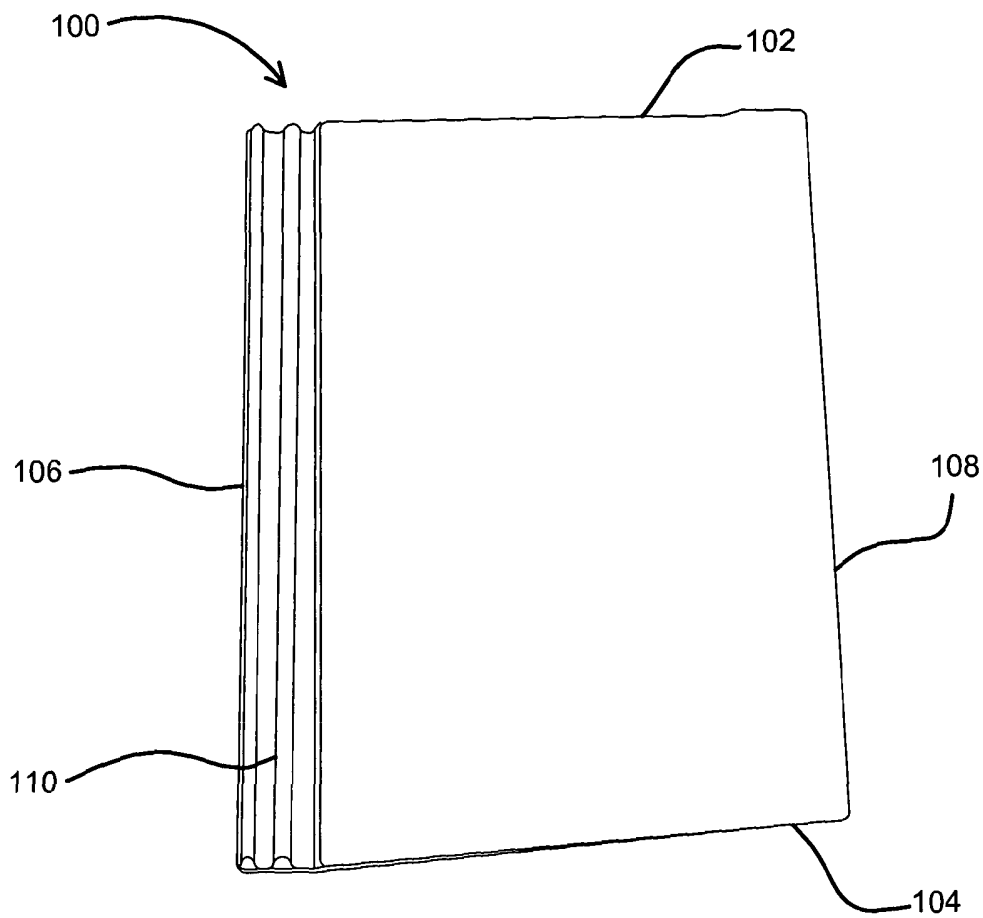


Figure 5

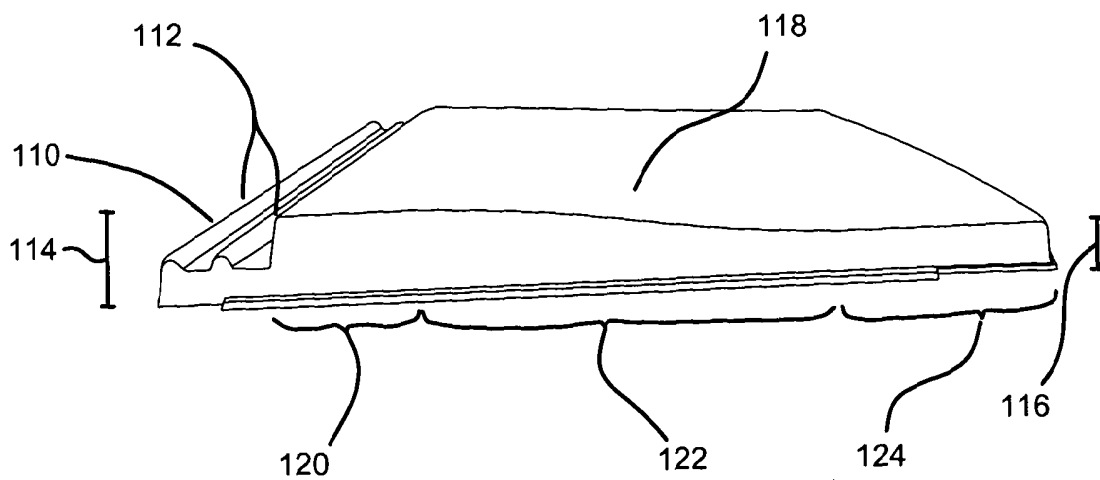


Figure 6



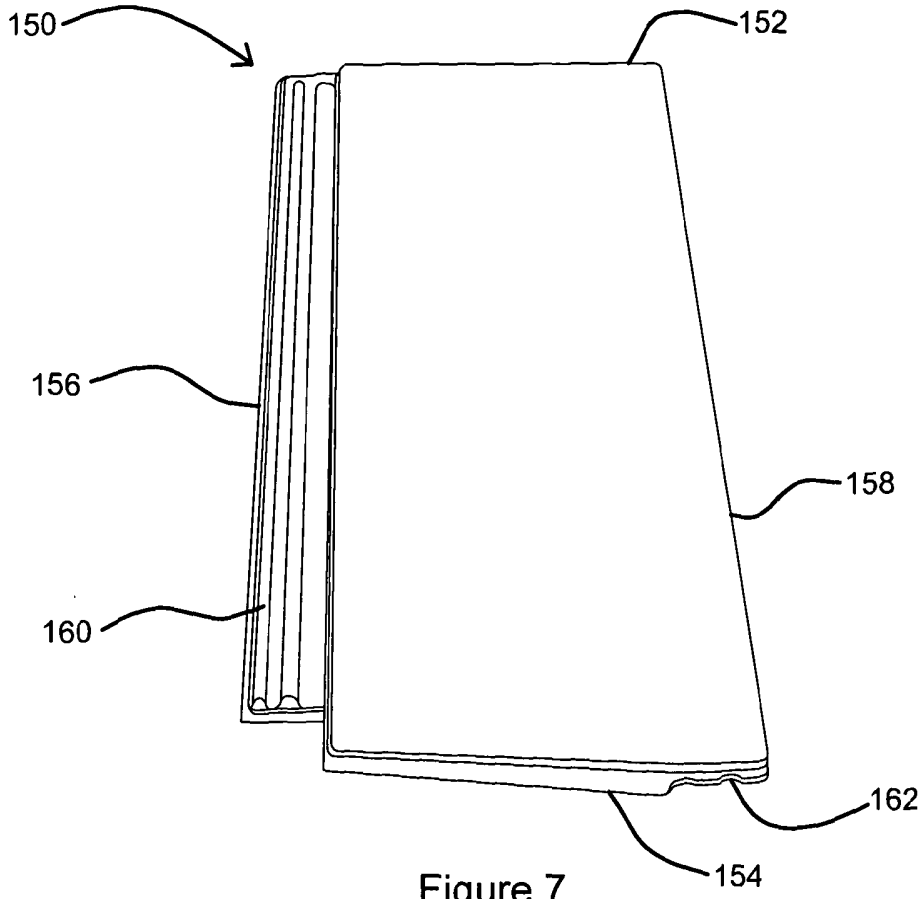


Figure 7

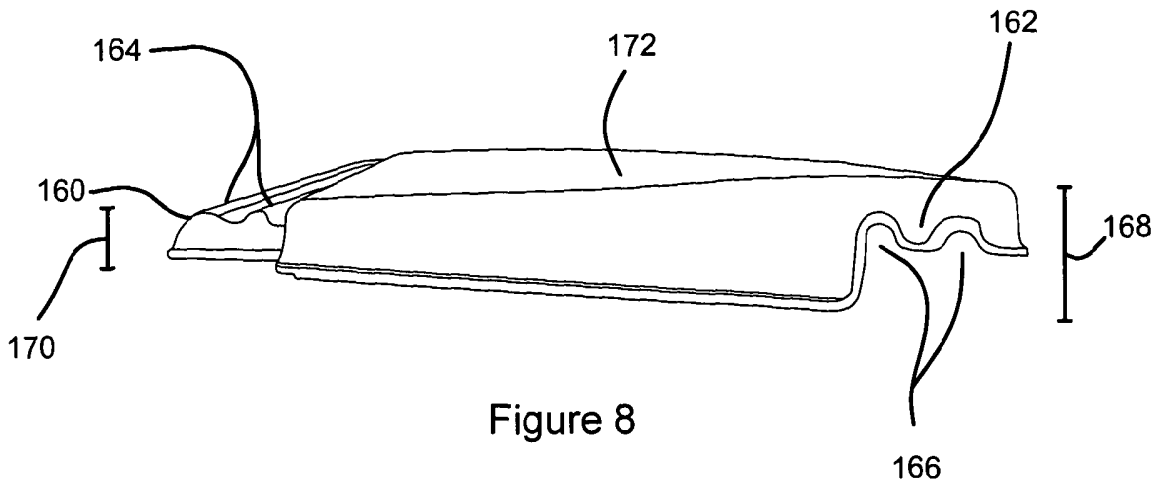


Figure 8



ROOF TILES

The present invention relates to roof tiles for forming pitched roof coverings.

- 5 In this specification, references to a "side" direction refer to the direction which would be across the pitch of a roof when the tiles are laid correctly, and references to an "up/down" of direction refer to the direction which would be up and down the pitch of such a roof.
- 10 The terms "upper edge" and "lower edge" (or "tail") are known to the skilled reader and refer to the edges of the tile at its highest and lowest point on the pitch when the tile is laid correctly. Similarly, the terms "side edge" and "side edges" are known and refer to the edge(s) of the tile on the left and/or right hand side(s) of the tile, which side edges abut an adjacent tile when laid out on a roof. Typically the side edge(s)
- 15 extend parallel to the pitch and perpendicular to the direction across the pitch. The skilled reader is also familiar with the term "side interlock", which refers to the part of the tile associated with a side edge of the tile that provides a mechanical engagement or interlock with an adjacent tile when laid out correctly on a roof.
- 20 Finally, the terms "top face" and "bottom face" (or "underside") are known to the skilled reader and refer to the surface of the tile that faces towards the sky or towards the ground, respectively, when the tile is set out on a roof.

One way to incorporate solar panels into a building is to provide such panels in the

25 form of solar roof tiles. However, whilst some progress has been made to adapt the dimensions of such solar roof tiles so that they conform as closely as possible to the dimensions of conventional roof tiles, it is presently very difficult to achieve an exact match of dimensions. Indeed, in order for a match to be achieved, it is necessary to design and manufacture a custom frame to house the solar panel. This is both

30 expensive and time consuming. This means that, in practice, a roofer cannot simply substitute a conventional roof tile with a solar roof tile. This can lead to difficulties in providing a complete and water-tight roof covering.

In particular, it may lead to abrupt or step-wise changes in the thickness or height of

35 the tiles. In this connection, solar roof tiles can be thicker than conventional tiles (because of the necessity of including the multiple layers and functional components of the solar panel within the solar roof tile). Similarly, the length of the solar roof tile

(i.e. the dimension extending in the direction of the pitch) can be greater than the corresponding dimension of a conventional roof tile, for example to accommodate components of the solar panel and ensure adequate fixing of the solar tile to the roof battens.

5

The present inventors have found that such a disparity in tile thickness/height can lead to one or more of inefficient water clearance from the roof, accumulation of dirt or debris on the roof, and even "lifting" of tiles from the roof because of undesirable airflow against and/or between tiles.

10

A further disadvantage noted by the present inventors is that the side edges of the solar roof tile may be partially exposed and this may have an adverse impact on the life span of the solar roof tile.

15

A further difficulty identified by the present inventors is that the difference in length between the solar roof tile and conventional roof tile can result in partial exposure of the side edges of the solar roof tile as discussed above. It is also aesthetically unsatisfactory.

20

The present inventors have devised a roof tile which seeks to address the problems of incorporating solar roof tiles into otherwise conventional roof coverings.

At its most general, a first proposal of the present invention is that a converter tile having a variable thickness should be provided so that the height of the roof covering can be adjusted from a comparatively thick solar roof tile to a comparatively thin conventional roof tile, whilst retaining the water tightness and weathering properties expected of a conventional roof covering.

25

A second proposal of the present invention is that a converter tile having side edges of different lengths should be provided so that a comparatively long solar tile can be used with a comparatively shorter conventional tile.

30

Aspects of the present invention pertaining to one or both of these proposals are set out below.

35

In a first aspect, the present invention provides a converter roof tile having upper and lower edges and first and second interlocks on respective opposite first and second

side edges of the tile for engagement with corresponding side interlocks on adjacent tiles when set out on a roof, the converter roof tile having a first thickness associated with the first side edge and a second thickness associated with the second side edge, wherein the first thickness is greater than the second thickness, and the
5 converter roof tile comprises a transition portion extending between the side edges, the transition portion having a thickness that varies across the width of the converter tile so as to provide a transition between the first and second thicknesses.

10 An advantage of the converter tile is that it does away with the need to design and manufacture a custom frame for the solar panel. In this way, the converter tile presents a simple and convenient alternative to the conventional approach to accommodating solar panels in a roof covering.

15 In embodiments, the converter roof tile provides a smooth transition between the first and second thicknesses. Suitably there is a smooth transition between first and second side edges. Suitably at least a part of the top face of the transition portion is curved. Preferably the radius of curvature of the top face varies as a function of distance from the first side interlock.

20 In embodiments, the transition portion comprises (A) optionally, a substantially linear starter portion in which the thickness is substantially constant; (B) a main portion in which the first thickness is reduced to substantially the second thickness; and (C) an end portion in which the thickness is substantially constant. Preferably the transition
25 portion comprises (A) a substantially linear starter portion in which the thickness is substantially constant.

30 Preferably the main portion comprises less than about 80% of the width of the transition portion (i.e. the distance between the side interlocks), more preferably less than about 70% of the width of the transition portion.

Suitably the main portion comprises at least 30% of the width of the transition portion, more preferably at least 50% of the width of the transition portion.

35 In a particularly preferred embodiment the main portion comprises about 50% to 70% of the width of the transition portion.

The present inventors have found that this particular arrangement provides particularly effective water clearance.

5 Preferably the top face of the main portion is curved. Preferably the radius of curvature varies as a function of distance from the first side interlock.

Preferably the linear starter portion (A) comprises less than 30% of the width of the transition portion, more preferably at least 10% of the width of the transition portion.

10 Suitably the transition portion comprises, as a percentage of the width of the transition portion,
(A) 10% to 30% substantially linear starter portion;
(B) 50% to 70% main portion wherein the top face of the main portion is curved; and
(C) the remainder end portion.

15 Preferably the transition portion provides a smooth transition between the starter portion, if present, the main portion and the end portion.

20 Whilst embodiments of the present invention are useful for "mating" a wide variety of solar and conventional roof tiles, the advantages of the converter tile are particularly evident in the case where the solar roof tile is considerably thicker than the conventional tile.

25 Accordingly, in embodiments, the first thickness is at least 50% larger than the second thickness. Suitably the first thickness is at least twice the second thickness.

Typically the first thickness is in the range 20mm to 40mm and the second thickness is in the range 10mm to 18mm, preferably the first thickness is in the range 28mm to 32mm and the second thickness is in the range 12mm to 16mm.

30 Suitably the roof tile is a left-hand (finisher) tile or a right-hand (starter) tile.

35 Preferably the first side interlock comprises at least one projection for engagement with a corresponding recess on an adjacent tile in use. Suitably the projection is a rib.

Preferably the second side interlock comprises at least one recess for engagement with a corresponding projection on an adjacent tile in use. Suitably the recess is an elongate recess for receiving a corresponding rib on an adjacent tile in use.

- 5 Preferably the upper edge thickness is substantially constant along the upper edge. Suitably in this arrangement, the converter tile has a contoured top face to accommodate the variation in thickness.

Typically one of the first and second side interlocks is on the top face of the roof tile
10 (the surface of the tile that faces towards the sky when set on a roof). Typically one of the first and second side interlocks is on the bottom face of the roof tile (the surface of the tile that faces towards the ground when set on a roof).

- Preferably the first side interlock is on the top face and the second side interlock is on
15 the bottom face.

Preferably, the thickness of the converter tile varies at the lower edge (tail) of the tile. Typically, the first thickness and second thickness are the thicknesses at respective first and second side edges at the lower edge (tail) of the converter roof tile.

- 20 Preferably the thickness of the tile along the upper edge of the tile is substantially constant. This arrangement can assist in providing an effective transition between a solar roof tile and a conventional roof tile wherein the conventional tile tapers from its upper edge to its lower edge (tail) (i.e. the conventional roof tile has a wedge shape or profile)

25 Suitably, the converter roof tile has upper and lower edge thicknesses associated with respective said upper and lower edges, wherein the upper edge thickness is greater than at least a part of the lower edge thickness and the transition portion extends between the upper and lower edges and wherein the transition portion has a
30 variable thickness so as to provide a transition between the upper and lower edge thicknesses.

In this way, embodiments of the present invention can address the problem of
35 accommodating solar tiles that have a uniform thickness and conventional tiles that have a thickness which varies between the comparatively thick upper edge to the comparatively thin lower edge (for example, conventional tiles having a wedge profile as discussed above).

In such embodiments, the converter tile has a wedge-shaped profile.

5 Suitably the width of the converter tile is selected so as to bring the roof tiles back into broken bond (the solar tiles, being of non-standard width, having taken the tiles out of normal broken bond). Accordingly, preferably the width of the converter tile is different from (i.e. wider or narrower than) the width of the conventional tile. In particular, in the case where the converter tile is a finisher tile (left hand), it is suitably a different width to the conventional tiles. Suitably, in the case where the converter
10 tile is a starter tile (right hand), the width of the starter tile is the same width of the conventional tile.

In an embodiment, the length of the two side edges of the converter tile are different. Suitably, the length of the first side edge (the first length) is greater than the length of
15 the second side edge (the second length). Suitably the lower edge is not parallel with the upper edge. In embodiments, the lower edge extends at an angle to a line perpendicular to one or both side edges. Suitably the lower edge is curved, to accommodate the difference in length. In this way, embodiments of the present invention can accommodate solar roof tiles that are longer than a conventional roof
20 tile.

Suitably the converter roof tile is a concrete or clay roof tile, preferably a clay roof tile.

25 As is apparent from the discussion herein, suitably the converter roof tile is a "flat" tile, which term is known to the skilled reader and excludes other types of tile such as pantiles.

In a second aspect, the present invention provides a converter roof tile having upper and lower edges and first and second side interlocks on respective opposite first and
30 second side edges of the tile for engagement with corresponding side interlocks on adjacent tiles when set out on a roof, the converter roof tile having a first length associated with the first side edge and a second length associated with the second side edge wherein the first length is greater than the second length.

35 Suitably the converter roof tile comprises a transition portion between the side edges, the transition portion having a length that varies between the first and second edges to provide a transition between the first and second lengths.

Suitably, the first length is at least 2% greater than the second length, preferably at least 3%.

- 5 Suitably the first length is in the range 400mm to 440mm, preferably 410mm to 430mm, more preferably 415mm to 425mm, and most preferably 418mm to 422mm.

Suitably the second length is in the range 385mm to 425mm, preferably 395mm to 415mm, more preferably 400mm to 410mm and most preferably 403mm to 407mm.

10

Preferably the converter roof tile includes a clip located on the bottom face of the tile for engagement with an adjacent tile when set out on a roof. Suitably the clip is integral with the bottom face of the tile. The clip is located so as to fit to the adjacent tile anywhere along the adjacent side interlock, thereby allowing for variations in length between the converter tile and solar tile, or converter tile and conventional roof tile. Suitably the clip is aligned so that it is in-line with the side interlock.

15

Generally, such a clip is provided only if the converter tile is made of a plastics material. In embodiments wherein the converter tile is made of other materials, for example clay or concrete, then the converter tile can be secured using the same fixing system as the surrounding tiles, for example using nails and/or tile clips.

20

In a further aspect, the present invention provides a set of roof tiles comprising at least one solar roof tile and at least one converter roof tile of the first or second aspect.

25

In a yet further aspect, the present invention provides a roof covering comprising at least one solar roof tile and at least one converter roof tile of the first or second aspect.

30

In a yet further aspect, the present invention provide a building having a roof covering as defined above.

Any one of the aspects of the present invention may be combined with any one or more of the other aspects. Furthermore, any of the optional or preferred features of any one of the aspects may apply to any of the other aspects. In particular, the features of the second aspect may be applied to the first aspect, and vice versa.

35

Brief description of the drawings

Embodiments of the invention are described below, by way of example only, with respect to the accompanying drawings, in which:

5

Figure 1 shows a left-hand finisher converter tile;

Figure 2 shows a right-hand starter converter tile;

Figure 3 shows a set of tiles comprising a left-hand finisher converter tile, a solar tile and a right-hand starter converter tile;

10

Figure 4 shows a converter tile interlocked to a solar roof tile;

Figure 5 shows another right-hand starter converter tile;

Figure 6 shows the lower edge (tail) of converter tile of Figure 5;

Figure 7 shows a left-hand finisher converter tile; and

Figure 8 shows the lower edge (tail) of converter tile of Figure 7.

15

Detailed description of embodiments

Figure 1 shows a left-hand "finisher" converter tile 2. This is suitable for providing a transition from a solar roof tile to a conventional roof tile, such as a concrete or clay roof tile.

20

The converter tile 2 comprises a left-side interlock 4 and a right-side interlock 6. The skilled reader is familiar with the term "side interlock" and these interlocks provide not only a mechanical connection between adjacent tiles but also assist in providing a water tight roof covering.

25

The converter tile 2 also includes an upper end 8 and lower end 10. When laid out on a roof, the upper end 8 lies under the row of tiles set out immediately above the present tile in the direction of the pitch of the roof.

30

The top face 12 of the converter tile provides a continuous surface extending between the left and right side edges of the converter tile and between the upper and lower ends.

35

As can be seen in Figure 1, the left side height or thickness 14 of the converter tile is considerably less than the right-hand side of the height or thickness 16 at the lower end of the converter tile. At the upper end of the converter tile, the left side thickness

and the right side thickness are more similar. Indeed, the upper end thickness 18 is substantially the same at all points between the left side edge and right side edge.

5 A consequence of the variation in thickness of the tile at the lower end of the tile in particular, is that the top face 12 comprises a sloping region 20. In this sloping region 20, the top face 12 exhibits a 3-dimensional contour. Furthermore, lower end wall 22 is also adapted to accommodate the greater height/thickness of the right side of the tile.

10 A converter tile 2 is therefore adapted so that it can be used adjacent a solar roof tile (that is, the solar roof tile can be placed to the right of the converter tile) so that the right side thickness 16 matches the thickness/height of the solar roof tile. This then provides a smooth transition from the comparatively "tall" planar surface of the solar
15 connection, a conventional roof tile can be placed adjacent the converter tile, abutting the left side of the converter tile, wherein the left side thickness 14 is adapted to match the thickness of the conventional roof tile.

Left side interlock 4 comprises two parallel ribs 24 which are provided so as to
20 engage with corresponding channels in the conventional roof tile side interlock. Similarly, the right side interlock 6 comprises two parallel channels shaped so as to receive two corresponding parallel ribs on the side interlock of a solar roof tile. Whilst ribs and channels, and in particular two parallel ribs and channels, have been found to provide a good mechanical interlock and resist the ingress of water, other side
25 interlock arrangements can also be used (e.g. any appropriate projection and corresponding recess).

In a particularly preferred example (not illustrated), the sloping movement 20 and
lower end wall 22 are adapted to provide a curved transition from the right side of the
30 thickness 16 to the left side thickness 14. In an especially preferred embodiment, the curved portion counts for less than about 80% of the width of the top face/lower end wall, with the remainder comprising a substantially linear profile. In other words, these embodiments demonstrate that the transition from the greater thickness of the solar roof tile to the smaller thickness of the conventional roof tile can be achieved
35 with a top face 12 and lower end wall 22 that varies non-linearly across the width of the converter tile.

Turning to Figure 2, there is shown a further embodiment of the present invention, being a right-hand "starter" converter tile. The arrangement is largely the same as the left hand "finisher" converter tile discussed above and shown in Figure 1.

- 5 As will be apparent, the "starter" converter tile is for placement between a solar roof tile and a conventional roof tile, with the solar roof tile being placed to the left of the converter tile, as viewed from the prospective shown in Figure 2.

10 The "starter" converter tile 30 comprises left side interlock 32 and right side interlock 34. Upper end 36 and lower end 38 define top face 40. The "starter" converter tile provides a transition between left side thickness 42 and right side thickness 44 (corresponding to the conventional roof tile). The upper end thickness 46 is adapted to provide a similar compatibility with the respective upper end thicknesses of the solar roof tile and adjacent conventional roof tile.

15 As could be seen from Figure 2, the most significant variation in thickness of the tile occurs at the lower end 38. Here, a sloping region 48 and lower end wall 50 provide the transition from the comparatively thick solar roof tile to the smaller conventional roof tile. Whilst a substantially linear slope is indicated in Figure 2, a particularly preferred embodiment comprises a curved portion and a linear portion. In particular,
20 it is preferred that in the regions adjacent the left and right side edges of the converter tile, the tile has a substantially constant thickness (that is, the top face is substantially flat and the thickness varies in the curved portion).

- 25 As with the left hand "finisher" converter tile discussed above, the right-hand "starter" converter tile 30 interlocked with the adjacent solar roof tile and conventional roof tile by virtue of parallel ribs 52 and parallel channels 54.

30 Turning to Figure 3, a solar tile 60 is provided in-between a left-hand "finisher" converter tile 62 and a right-hand "starter" converter tile 64. For example, the "finisher" and "starter" converter tiles can be the same as the embodiments discussed above with respect to Figures 1 and 2.

35 The solar tile 60 comprises a plurality of fixing holes 66, so that the solar tile can be fixed to one or more roof battens using nails or screws inserted through the holes. Typically, the solar tiles, converter tiles and conventional tiles in a particular row of tiles are all secured to the same batten (or series of battens arranged substantially

end to end). In other words, the converter roof tile is adapted so as to enable a single tiling course.

5 A mechanical and water-tight connection between the solar roof tile and converter tiles is achieved via side interlocks comprising a plurality of parallel ribs 68, on the top side of the solar roof tile, and corresponding channels 70 on the underside of the "finisher" converter tile. Similarly, parallel ribs on the top side of the "starter" converter tile interlock with corresponding channels 76 on the underside of the solar roof tile at its right hand edge.

10

Both the left-hand finisher converter tile 62 and the right-hand starter converter tile 64 are provided with further side interlocks at their respective distal ends (parallel ribs 72 and parallel channel 78) for connection with conventional roof tiles.

15

In this way, the starter and finisher tiles provide a neat and weather-tight transition from the solar roof tile to the conventional roof tiles. In a particularly preferred embodiment, wherein a plurality of the larger solar roof tiles are arranged to provide a four-wide solar tile array, the converter tiles are adapted to bring the roof tiles back into the correct half (broken) bond to the left of the solar roof tiles. Suitably this is achieved by adapting the width of the converter tile, as discussed above. In 20 embodiments, the finisher converter tile is a different width to the conventional tiles. This assists the roofer immensely and enables conventional setting of the conventional roof tiles. This leads to shorter installation times and greater assurance of water tightness.

25

Figure 4 shows a schematic end-on illustration of the interlock between a solar roof tile and a converter roof tile of the present invention. The solar roof tile 80 is mechanically interlocked with converter tile 82 by virtue of the kind of interlocking ribs and channels discussed above in respect of the tiles shown in Figures 1 to 3. To 30 further assist in retaining the two tiles in the desired orientation and to assist with water tightness, an integral clip 84 is provided on the underside of converter tile 82. This clip in use secures the side interlock portion of the solar roof tile against the side interlock portion of the converter tile 82. The clip is adapted to allow connection to the adjacent tile at anywhere on the adjacent side interlock, so that variations in length 35 between the neighbouring tiles can be accommodated.

Figure 5 shows a further embodiment, being a right hand starter tile 100. The converter tile has an upper edge 102 and lower edge 104. Extending between the upper and lower edges are left side edge 106 and right side edge 108. Interlock 110 is associated with the left side edge 106. Whilst upper edge 102 is substantially perpendicular to the side edges, this is not the case for lower edge 104, which extends at an angle to the perpendicular (consequently it is not parallel with upper edge 102). Specifically, left side edge 106 is longer than right side edge 108 and lower edge 104 extends at an to accommodate this.

Figure 6 shows the same converter tile from the lower edge (or tail). The side interlock 110 comprises two parallel ribs 112, which in use engage with corresponding detents or channels associated with an adjacent tile (typically, a solar roof tile). As can be seen from Figure 6, the thickness of the converter tile associated with the left side edge is greater than the thickness associated with the right side edge. Thus, left side thickness 114 is considerably greater than right side thickness 116. The thickness of the tile at the lower edge between the left and right sides is non-uniform. In particular, it reduces from the comparatively thick left side thickness to the comparatively thin right side thickness. The top face of the converter tile comprises a curved surface 118 which provides a smooth transition between the two different thicknesses.

In particular, the body of the tile which provides the transition between the thick and thin edges comprises a first section 120 having substantially linear thickness, a second section 122 having a thickness that reduces smoothly in the direction from left to right, and a third section 124 wherein the thickness is once again substantially linear. This flattened "S-shape" profile has been found to provide excellent water clearance and low resistance to wind as well as discouraging build up of dirt and debris on the roof. It is also aesthetically pleasing.

In contrast, the thickness of the tile at the upper edge 102 is substantially uniform. In this way, the converter tile can be used to "mate" a comparatively thick solar tile with a comparatively thin conventional tile, wherein the conventional tile has a wedge-shaped profile (i.e. is thicker at the upper edge than the lower edge).

Turning to Figures 7 and 8, a further embodiment is shown. This embodiment is a left hand finisher tile 150. Again, the tile has an upper edge 152 and lower edge 154, which lower edge is not parallel with the upper edge. This arrangement is to

accommodate the different lengths of the left side edge 156 and right side edge 158. This enables a comparatively long solar tile to be used with a comparatively short conventional tile, whilst ensuring that all of the side walls of the solar tile are covered.

5 Associated with the left side and right side edges respectively are left side interlock 160 and right side interlock 162. As shown in Figure 8, left side interlock 160 comprises two spaced apart parallel ribs 164, and right side interlock 162 comprises similarly spaced parallel channels 166. In use, the left side interlock engages with a corresponding interlock on a conventional tile and the right side interlock engages
10 with a corresponding interlock of a solar roof tile.

In order to accommodate the different thicknesses of the solar roof tile and the conventional roof tile, the embodiment shown in Figure 8 has a non-uniform thickness across the width of the tile. In particular, right side thickness 168 is
15 considerably larger than left side thickness 170 and the converter tile is provided with a curved top face 172 to accommodate this change in thickness. As discussed above for converter tile 100, this embodiment comprises a body whose thickness changes in a non-linear way across the width of the tile. Indeed, a flattened S-shape profile is also used for this tile.

20

It is to be understood that variants of the above described examples of the invention in its various aspects, such as would be readily apparent to the skilled person, may be made without departing from the scope of the invention in any of its aspects.

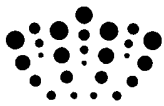
Claims

1. A converter roof tile having upper and lower edges and first and second interlocks on respective opposite first and second side edges of the tile for
5 engagement with corresponding side interlocks on adjacent tiles when set out on a roof, the converter roof tile having a first thickness associated with the first side edge and a second thickness associated with the second side edge, wherein the first thickness is greater than the second thickness, and the converter roof tile comprises a transition portion extending between the side edges, the transition portion having a
10 thickness that varies across the width of the converter tile so as to provide a transition between the first and second thicknesses.
2. A converter roof tile according to claim 1, wherein at least a part of the top
15 face of the transition portion is curved.
3. A converter roof tile according to claim 2, wherein the radius of curvature of the top face varies as a function of distance from the first side interlock.
4. A converter roof tile according to any one of claims 1 to 3, wherein the
20 transition portion comprises (A) optionally, a substantially linear starter portion in which the thickness is substantially constant; (B) a main portion in which the first thickness is reduced to substantially the second thickness; and (C) an end portion in which the thickness is substantially constant.
- 25 5. A converter roof tile according to claim 4, wherein the main portion comprises less than about 80% of the width of the transition portion.
6. A converter roof tile according to claim 5, wherein the main portion comprises
30 less than about 70% of the width of the transition portion.
7. A converter roof tile according to any one of claims 4 to 6, wherein the main portion comprises at least 30% of the width of the transition portion.
8. A converter roof tile according to claim 7, wherein the main portion comprises
35 at least 50% of the width of the transition portion.

9. A converter roof tile according to any one of claims 4 to 8, wherein the main portion comprises about 50% to 70% of the width of the transition portion.
- 5 10. A converter roof tile according to any one of claims 4 to 9, wherein the top face of the main portion is curved.
11. A converter roof tile according to any one of claims 4 to 10, wherein the transition portion comprises (A) a substantially linear starter portion.
- 10 12. A converter roof tile according to claim 11, wherein the linear starter portion comprises less than 30% of the width of the transition portion.
13. A converter roof tile according to claim 11 or claim 12, wherein the linear starter portion comprises at least 10% of the width of the transition portion.
- 15 14. A converter roof tile according to any one of claims 11 to 13, wherein the transition portion comprises, as a percentage of the transition portion,
(A) 10% to 30% substantially linear starter portion;
(B) 50% to 70% main portion wherein the top face of the main portion is curved; and
20 (C) the remainder substantially linear end portion.
15. A converter roof tile according to any one of claims 4 to 14, wherein the transition portion provides a smooth transition between the starter portion, if present, the main portion and the end portion.
- 25 16. A converter roof tile according to any one of the preceding claims, wherein the first thickness is at least 50% greater than the second thickness.
17. A converter roof tile according to claim 16, wherein the first thickness is at
30 least twice the second thickness.
18. A converter roof tile according to claim 16 or claim 17, wherein the first thickness is in the range 20mm to 40mm and the second thickness is in the range 10mm to 18mm.
- 35 19. A converter roof tile according to claim 18, wherein the first thickness is in the range 28mm to 32mm and the second thickness is in the range 12mm to 16mm.

20. A converter roof tile according to any one of the preceding claims, wherein the roof tile is a left-hand (finisher) tile.
- 5 21. A converter roof tile according to any one of the preceding claims, wherein the roof tile is a right-hand (starter) tile.
22. A converter roof tile according to any one of the preceding claims, wherein the first side interlock comprises at least one projection for engagement with a
10 corresponding recess on an adjacent tile in use.
23. A converter roof tile according to claim 22, wherein the projection is a rib.
24. A converter roof tile according to any one of the preceding claims, wherein
15 the second side interlock comprises at least one recess for engagement with a corresponding projection on an adjacent tile in use.
25. A converter roof tile according to claim 24, wherein the recess is an elongate
20 recess for receiving a corresponding rib on an adjacent tile in use.
26. A converter roof tile according to any one of the preceding claims, wherein one of the first and second side interlocks is on the top face of the roof tile.
27. A converter roof tile according to claim 26, wherein the first side interlock is
25 on the top face and the second side interlock is on the bottom face.
28. A converter roof tile according to any one of the preceding claims, wherein the first side edge and the second side edge are different lengths.
- 30 29. A converter roof tile having upper and lower edges and first and first and second side interlocks on respective opposite first and second side edges of the tile for engagement with corresponding side interlocks on adjacent tiles when set out on a roof, the converter roof tile having a first length associated with the first side edge and a second length associated with the second side edge wherein the first length is
35 greater than the second length.

30. A converter roof tile according to claim 29, wherein the converter roof tile comprises a transition portion between the side edges, the transition portion having a length that varies between the first and second edges to provide a transition between the first and second lengths.
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31. A converter roof tile according to claim 29 or claim 30, wherein the first length is at least 2% greater than the second length, preferably at least 3%.
32. A converter roof tile according to any one of claims 29 to 31, wherein the
10 converter roof tile is a converter roof tile according to any one of claims 1 to claims 28.
33. A converter roof tile according to any one of the preceding claims, wherein
15 the roof tile includes a clip located on the bottom face of the tile for engagement with an adjacent tile when set out on a roof.
34. A converter roof tile according to claim 33, wherein the clip is integral with the bottom face of the tile.
- 20 35. A set of roof tiles comprising at least one solar roof tile and at least one converter roof tile according to any one of claims 1 to 34.
36. A set of roof tiles according to claim 35, also including at least one
25 conventional roof tile.
37. A set of roof tiles according to claim 36, wherein the or each at least one
converter roof tile is a different width to the or each at least one conventional roof tile.
38. A roof covering comprising a set of roof tiles according to any one of claims
30 35 to 37.
39. A building having a roof covering according to claim 38.
40. A converter roof tile according to any one embodiment substantially as herein
35 described with reference to and as shown in the accompanying drawings.



International Classification:

Subclass	Subgroup	Valid From
E04D	0001/30	01/01/2006
E04D	0013/18	01/01/2006