



(43) International Publication Date
5 February 2015 (05.02.2015)

- (51) International Patent Classification: Not classified
- (21) International Application Number:
PCT/US2014/048636
- (22) International Filing Date:
29 July 2014 (29.07.2014)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/859,669 29 July 2013 (29.07.2013) US
- (71) Applicant: **ARMSTRONG WORLD INDUSTRIES, INC.** [US/US]; 2500 Columbia Avenue, Lancaster, PA 17603 (US).
- (72) Inventors: **STOLL, Brent, L.**; 526 Wagonwheel Road, Lititz, PA 17543 (US). **NYESMITH, Pamela, J.**; 37 Violenets Path, Elizabethtown, PA 17022 (US). **HINKLE, Yon, E.**; 113 Swedesford Lane, Millersville, PA 17551 (US).
- (74) Agent: **FERNANDEZ, Amy, M.**; Armstrong World Industries, Inc., 2500 Columbia Avenue, Lancaster, PA 17603 (US).
- (81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

(54) Title: FLOOR PANEL KIT AND METHOD OF FORMING THE SAME

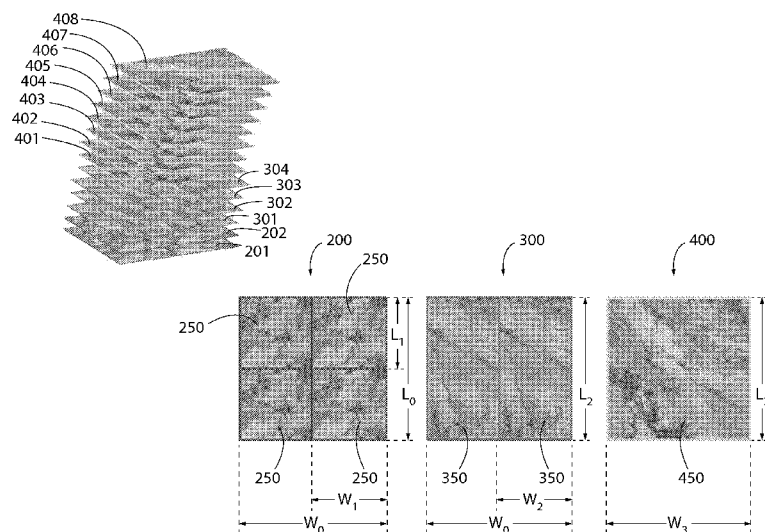


FIG. 1

(57) Abstract: A kit of floor panels and a method of forming the same. In one aspect, the kit can be a kit of floor panels comprising: a container having an inner cavity containing a stacked assembly of floor panels; the stacked assembly of floor panels comprising: one or more layers of first floor panels having a first width and a first length; one or more layers of second floor panels having a second width and a second length; one or more layers of a third floor panel having a third width and a third length; and wherein the third width is different than the first and second widths and wherein the first length is different than the second and third lengths.

FLOOR PANEL KIT AND METHOD OF FORMING THE SAME

CROSS-REFERENCE TO RELATED PATENT APPLICATIONS

[0001] The present application claims the benefit of United States Provisional Patent Application Serial No. 61/859,669, filed July 29, 2013, the entirety of which is incorporated herein by reference.

FIELD

[0002] The present invention relates generally to a kit containing a plurality of floor panels, and particularly to a kit containing a plurality of floor panels having different dimensions.

BACKGROUND

[0003] When laying floor panels or tiles on a floor, it can be desirable to use floor panels having different dimensions to create a desired pattern with the floor panels. Typically, this requires a consumer purchasing multiple boxes of floor panels, each box having floor panels with the same width and length dimensions. However, purchasing floor panels in this manner results in the consumer having excess floor panels of one size and not enough floor panels of another size.

[0004] Thus, a need exists for a floor panel kit that includes floor panels of different sizes.

SUMMARY

[0005] The present disclosure is directed to a kit of floor panels and a method of forming the same. In some embodiments the kit includes a container and a plurality of different layers of floor panels, the layers having floor panels with differing dimensions.

[0006] In one embodiment, the kit can be a kit of floor panels comprising: a container having an inner cavity containing a stacked assembly of floor panels; the stacked assembly of floor panels comprising: one or more layers of first floor panels having a first width and a first length; one or more layers of second floor panels having a second width and a second length; one or more layers of a third floor panel having a third width and a third length; and wherein the third width is different than the first and second widths and wherein the first length is different than the second and third lengths.

[0007] In another embodiment, the kit can be a kit comprising: a package containing a plurality of floor panels that can be arranged on a floor in an opus pattern; the plurality of floor panels comprising: a first set of floor panels having a first width and a first length; a second set of floor panels having a second width and a second length; and a third set of floor panels having a third width and a third length; and wherein the first, second and third sets of floor panels are positioned in the package in a stacked arrangement.

[0008] In a further embodiment, a method of packaging a plurality of floor panels comprises: a) providing an unfolded container; b) positioning one or more layers of first floor panels on the unfolded container, wherein each of the one or more layers of the first floor panels comprises four of the first floor panels each having a first width and a first length; c) positioning one or more layers of second floor panels atop a top layer of the first floor panels, wherein each of the one or more layers of the second floor panels comprises two of the second floor panels each having a second width and a second lengths; d) positioning one or more layers of a third floor panel atop a top layer of the second floor panels, wherein each of the one or more layers of the third floor panel comprises one of the third floor panels having a third width and a third length; e) folding the container around the layers of the first, second and third floor panels; and f) flipping the carton so that the first, second and third floor panels are upside-down in the container.

[0009] In yet another embodiment, the kit can be a kit of floor panels comprising: a container having an inner cavity containing a stacked assembly of floor panels; the stacked assembly of floor panels comprising: at least one first layer comprising four first floor panels, each of the first floor panels having a first width, a first length and a first area; at least one second layer comprising two second floor panels, each of the second floor panels having a second width, a second length and a second area; at least one third layer comprising a third floor panel, the third floor panel having a third width, a third length and a third area; and wherein each of the first, second and third areas are different.

[0010] Further areas of applicability of the present invention will become apparent from the detailed description provided hereinafter. It should be understood that the detailed description and specific examples, while indicating the preferred embodiment of the invention, are intended for purposes of illustration only and are not intended to limit the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The present invention will become more fully understood from the detailed description and the accompanying drawings, wherein:

[0012] Figure 1 is a stacked and individual view of floor panels of a kit in one embodiment;

[0013] Figure 2 is a cross-sectional schematic of the floor panels of FIG. 1 positioned within a container to form the kit; and

[0014] Figure 3 is a cross-sectional schematic of the floor panels of FIG. 1 showing additional details thereof.

[0015] All drawings are schematic and not necessarily to scale.

DETAILED DESCRIPTION

[0016] The following description of the preferred embodiment(s) is merely exemplary in nature and is in no way intended to limit the invention, its application, or uses. The description of illustrative embodiments according to principles of the present invention is intended to be read in connection with the accompanying drawings, which are to be considered part of the entire written description. Moreover, the features and benefits of the invention are illustrated by reference to the exemplified embodiments. Accordingly, the invention expressly should not be limited to such exemplary embodiments, which illustrate some possible non-limiting combinations of features that may exist alone or in other combinations of features; the scope of the invention being defined by the claims appended hereto.

[0001] In the description of embodiments disclosed herein, any reference to direction or orientation is merely intended for convenience of description and is not intended in any way to limit the scope of the present invention. Relative terms such as "lower," "upper," "horizontal," "vertical," "above," "below," "up," "down," "top" and "bottom" as well as derivative thereof (e.g., "horizontally," "downwardly," "upwardly," etc.) should be construed to refer to the orientation as then described or as shown in the drawing under discussion. These relative terms are for convenience of description only and do not require that the apparatus be constructed or operated in a particular orientation. Terms such as "attached," "affixed," "connected," "coupled," "interconnected," and similar refer to a relationship wherein structures are secured or attached to one another either directly or indirectly through intervening structures, as well as both movable or rigid attachments or relationships, unless expressly described otherwise.

[0017] Referring first to Figure 1, various floor panels that can be included in the inventive kit will be described. In certain embodiments, the various floor panels can be used to form an opus pattern when the floor panels are adhered to a floor in a consumer's home. However, the invention is not to be so limited and the floor panels can be intended to form other patterns including without limitation straight, diagonal, running bond, checkerboard, diagonal with dots, pinwheel, basketweave, modular, Versailles, herringbone, windmill or the like. All of the various floor panels, regardless of their size, shape and dimensions, can be provided within a single package or container in a stacked arrangement while preventing or reducing the likelihood of breaking any of the floor panels. Thus, all of the different sized floor panels necessary to create an opus pattern (or other desired pattern) can be packaged and sold in a single container.

[0018] The floor panels include first floor panels 250, second floor panels 350 and third floor panels 450. Four of the first floor panels 250 are arranged together to form a collective first panel layer 200, two of the second floor panels 350 are arranged together to form a collective second panel layer 300, and each one of the third floor panels 450 forms a collective third panel layer 400 on its own.

[0019] The first floor panels 250 have a first width W_1 and a first length L_1 and a first area, the first area being equal to the first width W_1 multiplied by the first length L_1 . Furthermore, the collective first panel layer 200, which is formed from four of the first floor panels 250 being arranged in an adjacent and abutting manner, has an overall width W_O and an overall length L_O . In certain embodiments, the first width W_1 can be eight inches (203.2 mm) and the first length L_1 can be eight inches (203.2 mm) such that each of the first floor panels 250 are eight inch (203.2 mm) by eight inch (203.2 mm) square floor panels or tiles. Furthermore, in certain embodiments the overall width W_O can be sixteen inches (406.4 mm) and the overall length L_O can be sixteen inches (406.4 mm) such that the first panel layer is a sixteen inch (406.4 mm) by sixteen inch (406.4 mm) square layer formed from four of the first floor panels 250. Of course, the invention is not to be so limited and various modifications in the first width W_1 and the first length L_1 of the first floor panels 250 and the overall width W_O and length L_O of the first panel layer 200 can be made so that the dimensions of the first floor panels 250 and of the first panel layers 200 can be other than that noted above. For example, the first floor panels 250 can be two inch (50.8 mm) by two inch (50.8 mm) squares, four inch (101.6 mm) by four inch (101.6 mm) squares, two inch (50.8 mm) by four inch (101.6 mm) rectangles or any other dimension in other

embodiments. Furthermore, the first panel layer 200 can be eight inch (203.2 mm) by eight inch (203.2 mm) squares, twenty inch (508 mm) by twenty inch (508 mm) squares, sixteen inch (406.4 mm) by twenty inch (508 mm) rectangles or any other dimension in other embodiments.

[0020] The second floor panels 350 have a second width W_2 and a second length L_2 and a second area, the second area being equal to the second width W_2 multiplied by the second length L_2 . Furthermore, the collective second panel layer 300, which is formed from two of the second floor panels 350 being arranged in an adjacent and abutting manner, has the same overall width W_O and the same overall length L_O as the first panel layers 200. In certain embodiments, the second width W_2 can be eight inches (203.2 mm) and the second length L_2 can be sixteen inches (406.4 mm). Of course, the invention is not to be so limited and various modifications in the second width W_2 and the second length L_2 of the second floor panels 350 can be made. For example, the second floor panels 350 can be two inch (50.8 mm) by two inch (50.8 mm) squares, four inch (101.6 mm) by four inch (101.6 mm) squares, two inch (50.8 mm) by four inch (101.6 mm) rectangles or any other dimension in other embodiments.

[0021] The third floor panels 450 have a third width W_3 and a third length L_3 and a third area, the third area being equal to the third width W_3 multiplied by the third length L_3 . In the exemplified embodiment, the third panel layer 400 is formed from a single third floor panel 450, and thus the third width W_3 and the third length L_3 are the same as the overall width W_O and the overall length L_O . Thus, in the exemplified embodiment the third width W_3 and the third length L_3 are approximately sixteen inches (406.4 mm) such that the third floor panel 450 is a sixteen inch (406.4 mm) by sixteen inch (406.4 mm) square floor panel. Of course, the invention is not to be limited by the specific dimensions of the third floor panel 450 in all embodiments, and the third width W_3 and the third length L_3 can be other than that noted above, such that the third floor panel 450 can be an eight inch (203.2 mm) by eight inch (203.2 mm) square, a twenty inch (508 mm) by twenty inch (508 mm) square, or the like.

[0022] In certain embodiments, due to the various width and length dimensions of the first, second and third floor panels 250, 350, 450 discussed above, each of the first, second and third areas are different. In certain embodiments the third area is greater than the first and second areas and the second area is greater than the first area. Thus, the first floor panels 250 are the smallest in terms of overall surface area and the third floor panels 450 are the largest in terms of

overall surface area, the second floor panels 350 having an overall surface area in between the first and third floor panels 250, 450. In certain embodiments the area of the first floor panels 250 can be approximately 64 square inches (approximately 1600 mm^2), the area of the second floor panels 350 can be approximately 128 square inches (approximately 3250 mm^2), and the area of the third floor panels 450 can be approximately 256 square inches (approximately 6500 mm^2).

[0023] Although specific examples of the dimensions of the first, second and third panel layers 250, 350, 450 are provided above, the invention is not to be particularly limited thereby. However, in certain embodiments the first width W_1 of the first floor panel 250 is the same as the second width W_2 of the second floor panel 350 while the third width W_3 of the third floor panel 350 is different than the first and second widths W_1 , W_2 . Furthermore, in the exemplified embodiment the second length L_2 of the second floor panel 350 is the same as the third length L_3 of the third floor panel 450, but the first length L_1 of the first floor panel 250 is different than each of the second and third lengths L_2 , L_3 . Furthermore, in the exemplified embodiment each of the first, second and third panel layers 200, 300, 400 has the same overall dimensions (i.e., the width W_O and the length L_O), but the invention is not to be so limited in all embodiments.

[0024] Referring to Figures 1 and 2 concurrently, a kit 1000 of the floor panels 250, 350, 450 will be further described. To form the kit, the first, second and third floor panels 250, 350, 450 are arranged in a stacked assembly and positioned within a container 500. The container 500 can be a box, a carton, a crate or any other type of packaging structure. In some embodiments, the container 500 is a carton or box formed of a cardboard material. The container may be a corrugated container 500 in some embodiments. However, the invention is not to be so limited in all embodiments and the container 500 can be formed of other materials. Furthermore, in some embodiments the container 500 may include indicia thereon such as instructions for forming a particular pattern, such as an opus pattern, using the floor panels 250, 350, 450 of the kit 1000, manufacturer information, product installation information or the like. In some embodiments the instructions for forming a particular pattern may be in the form of a website link that provides the instructions to the consumer. Furthermore, in some embodiments instructions may not be provided on the box itself, but rather in a pamphlet, sheet, booklet or the like that is positioned within the container 500 as discussed in more detail below.

[0025] The floor panels 250, 350, 450 are positioned within an inner cavity 501 of the container 500 in the form of the panel layers 200, 300, 400. As noted above, each of the panel layers 200 comprises four of the floor panels 250 that are arranged in an abutting and adjacent manner, each of the panel layers 300 comprises two of the floor panels 350 that are arranged in an abutting and adjacent manner, and each of the panel layers 400 comprises one of the floor panels 450. In the exemplified embodiment, each of the panel layers 200, 300, 400 has the same length and width dimensions. However, the invention is not to be so limited in all embodiments unless so specified in the claims.

[0026] The kit 1000 comprises a first and a second 201, 202 of the first panel layers 200, a first, a second, a third and a fourth 301, 302, 303, 304 of the second panel layers 300 and a first, a second, a third, a fourth, a fifth, a sixth, a seventh and an eighth 401, 402, 403, 404, 405, 406, 407, 408 of the third panel layers 400 arranged in a stacked assembly. The first 201 of the first panel layers 200 is positioned within the package 500 first, and then the second 202 of the first panel layers 200 is positioned atop the first 201 of the first panel layers 200. The first 301 of the second panel layers 300 is positioned atop the second 202 of the first panel layers 200, and then the second, third and fourth 302, 303, 304 of the second panel layers 300 are positioned, in order, atop of the first 301 of the second panel layers 300. Finally, the first 401 of the third panel layers 400 is positioned atop the fourth 304 of the second panel layers 300, and then the second, third, fourth, fifth, sixth, seventh and eighth 402, 403, 404, 405, 406, 407, 408 of the third panel layers 400 are positioned, in order, atop the first 401 of the third panel layers 400.

[0027] The first panel layer 200 includes four of the first floor panels 250 and there are two of the first panel layers 200 in the container 500, and thus the kit 1000 includes eight of the first floor panels 250 therein. The second panel layer 300 includes two of the second floor panels 350 and there are four of the second panel layers 300 in the container 500, and thus the kit 1000 includes eight of the second floor panels 350 therein. The third panel layer 400 includes one of the third floor panels 450 and there are eight of the third panel layers 400 in the container 500, and thus the kit 1000 includes eight of the third floor panels 450 therein. Thus, in the exemplified embodiment the kit 1000 includes eight of each of the first, second and third floor panels 250, 350, 450. However, the invention is not to be so limited and various numbers of the different floor panels can be positioned within the container 500 and form a part of the kit 1000 in various other embodiments.

[0028] Still referring to Figures 1 and 2 concurrently, a method of forming the kit 1000 will now be described. First, the container 500 is provided in an unfolded state so that a top surface 502 of the container 500 is face down. Then, the first panel layers 200 (i.e., layers 201 and 202) are positioned within the inner cavity 501 of the container 500 so as to be positioned on a roof 503 of the inner cavity 501, the roof 503 of the inner cavity 501 sharing a flap of material with the top surface 502. Next, the second panel layers 300 (i.e., layers 301, 302, 303 and 304) are positioned within the inner cavity 501 of the container 500 so as to be positioned atop of the first panel layers 200, and more specifically atop of the second 202 of the first panel layers 200. Next, the third panel layers 400 (i.e., layers 401, 402, 403, 404, 405, 406, 407 and 408) are positioned within the inner cavity 501 of the container 500 so as to be positioned atop of the second panel layers 300, and more specifically atop of the fourth 304 of the second panel layers 300.

[0029] Finally, in certain embodiments, an instruction sheet 600 can be provided in the container 500. The instruction sheet 600 can be a piece of paper, a packet of papers, a booklet, a compact disc (CD) or any other medium that can provide the consumer with information regarding the product, including information regarding how to assemble the floor panels 250, 350, 450 into a desired pattern, such as for example without limitation an opus pattern. Of course, the instruction sheet 600 need not form a part of the kit 1000 and can be omitted in other embodiments.

[0030] In the exemplified embodiment, the instruction sheet 600 is positioned atop of the eighth 408 of the third panel layers 400. However, the invention is not to be so limited and the instruction sheet 600 can be positioned at any location in the container 500, including in between any of the adjacent panel layers 200, 300, 400, between the panel layers 200, 300, 400 and a sidewall of the container 500, or taped or otherwise adhered to an outer surface of the container 500. Furthermore, in still other embodiments the instruction sheet 600 can be altogether omitted. In such embodiments the kit 1000 may not include any instructions, or the instructions may be provided directly onto the container 500 as discussed above, or through a website on the Internet. Furthermore, the instruction sheet 600 is illustrated as being smaller (at least in one of the length or width dimensions) than the floor panels 250, 350, 450. However, in other embodiments the instruction sheet 600 may have the same or similar dimensions as the dimensions of the floor panels 250, 350, 450.

[0031] After all of the panel layers are positioned within the container 500 and the instruction sheet 600 is positioned within the container 500 in embodiments that include the instruction sheet 600, the container 500 is folded around the panel layers and sealed shut, such as by using tape, glue, other adhesives, fasteners or the like. Finally, after sealing the container 500, the container 500 is flipped or rotated so that the top surface 502 of the container 500 is exposed. Flipping of the container 500 is achieved by rotating the container 500 180° about an axis extending through the sidewalls of the container 500 (as opposed to an axis extending through the bottom and top surfaces of the container 500). Upon flipping or rotating the container 500 as noted above, the floor panels 250, 350, 450 will be upside-down in the container 500 such that the top surfaces of the floor panels 250, 350, 450 will be facing the floor, pallet or other structure upon which the container 500 is placed and the top surface 502 of the container 500 will be positioned away from the floor, pallet or other structure upon which the container 500 is placed and will be exposed for consumer viewing.

[0032] When the container 500 is flipped and shut, the largest floor panels (i.e. the third floor panels 450) are positioned on the bottom of the stacked assembly and the smallest floor panels (i.e., the first floor panels 250) are positioned on the top of the stacked assembly, with the second floor panels 350 being positioned in between the first and third floor panels 250, 450. Such an arrangement can be beneficial to prevent damage of the floor panels 250, 350, 450 during shipping. Specifically, because the largest third floor panels 450 are on the bottom of the container 500 during shipping, the kit 1000 is sturdy. To the contrary, if the smaller first floor panels 250 were on the bottom of the container 500 during shipping, it is possible that movement of the first floor panels 250 relative to one another could cause the larger floor panels 350, 450 positioned above them to crack during shipping. Thus, the arrangement of the stacked assembly of floor panels disclosed herein and exemplified in Figure 2 prior to flipping of the container 500 (thus Figure 2 illustrates the stacked assembly opposite to the arrangement during shipping because after the container 500 is closed the entire container 500 is flipped so that the top surface 502 is exposed).

[0033] Referring now to Figure 3, the structural details of the floor panels 250, 350, 450 will be described. Each of the floor panels 250, 350, 450 can have the same structural components as discussed below. In the exemplified embodiment, the floor panel 250, 350, 450 is a laminate structure comprising a top layer 180 having a top surface 10 and a bottom layer 181 having a

bottom surface 11. Each of the top layer 180 and the bottom layer 181 may comprises a plurality of layers. In one such embodiment, the top layer 180 may comprise a mix layer, a wear layer and a top coat layer. Moreover, in other embodiments, the floor panel 250, 350, 450 can comprise layers in addition to the top and bottom layers 180, 181, such as an intermediate fiberglass or polyester scrim layer. Additional layers may also include one or more of an antimicrobial layer, a sound deadening layer, a cushioning layer, a slide resistant layer, a stiffening layer, a channeling layer, a mechanically embossed texture, or a chemical texture.

[0034] The top layer 180 comprises the top surface of the body 110. In one embodiment, the top layer 180 comprises a flexible sheet material comprising plastic, vinyl, polyvinyl chloride, polyester, or combinations thereof. The bottom layer 180, in certain embodiments, may comprise a flexible sheet material comprising plastic, vinyl, polyvinyl chloride, polyester, polyolefin, nylon, or combinations thereof. Thus, in certain embodiments the floor panels 250, 350, 450 have a degree of flexibility in that they are not completely rigid like a stone or ceramic tile, but are capable of being slightly bent or flexed. In that regard, the floor panel 250, 350, 450, in one embodiment, is designed so as to have a Young's modulus in a range of 240 MPA to 620 MPA. In another embodiment, the floor panel 250, 350, 450 is designed so as to have a Young's modulus in a range of 320 MPA to 540 MPA

[0035] In one embodiment, the body 110 of the floor panel 250, 350, 450 has a thickness in the range of 2 mm to 12 mm. In another embodiment, the body 110 of the floor panel 250, 350, 450 has a thickness in the range of 2 mm to 5 mm. In one specific embodiment, the body 110 of the floor panel 250, 350, 450 has a thickness in the range of 3 mm to 4 mm.

[0036] In the illustrated embodiment, the top layer 180 comprises a clear film/wear layer positioned atop a top mix layer. The top mix layer may be formed, for example, from a substantially flexible sheet material, such as plastic, vinyl, polyvinyl chloride, polyester, or combinations thereof. A visible decorative pattern 163 may be applied to the top surface of the top layer 180, such as beneath the clear film/wear layer. The clear film/wear layer, in certain embodiments, may have a thickness of about 4-40 mils (about 0.1-1.0 millimeters), preferably about 6-20 mils (about 0.15-0.5 millimeters), and more preferably about 12-20 mils (about 0.3-0.5 millimeters).

[0037] The top layer 180, in certain embodiments, may have a thickness of about 34-110 mils (about 0.8-2.8 millimeters), preferably about 37-250, 350, 450 mils (about 0.9-2.5 millimeters), and more preferably about 38-250, 350, 450 mils (about 1.0-2.5 millimeters).

[0038] The bottom layer 181, in the illustrated embodiment, comprises only a bottom mix layer. The bottom mix layer may be formed, for example, from a flexible sheet of material comprising plastic, vinyl, polyvinyl chloride, polyester, polyolefin, nylon, or combinations thereof. The bottom layer 181 may also, in other embodiments, include recycled material, such as post-industrial or post-consumer scrap.

[0039] The bottom layer 181, in certain embodiments, may have a thickness of about 34-110 mils (about 0.8-2.8 millimeters), preferably about 37-250, 350, 450 mils (about 0.9-2.5 millimeters), and more preferably about 38-250, 350, 450 mils (about 1.0-2.5 millimeters).

[0040] In certain embodiments, the bottom surface of the top layer 180 is laminated to the top surface of the bottom layer 181 by an adhesive. The adhesive may be, for example, any suitable adhesive, such as a hot melt adhesive, a pressure sensitive adhesive, or a structural and/or reactive adhesive. The adhesive may have, for example, a bond strength of at least 25 force-pounds, and more preferably about 25-30 force-pounds after having been heat aged for about 24 hours at 145 degrees Fahrenheit. In the illustrated embodiment, the adhesive is provided on substantially an entirety of the top surface of the bottom layer 181. The adhesive may be applied to have a thickness, for example, of about 1-2 mils (about 0.0254-0.0508 millimeters). It will be appreciated by those skilled in the art, however, that the thickness of the adhesive may vary depending on the texture of the bottom surface of the top layer 180 and the texture of the top surface of the bottom layer 181 in that a substantially smooth surface would require less of the adhesive due to better adhesion and bond strength.

[0041] The top and bottom mix layers may be made from plasticizer, filler, and binder, and may be made in the following percentages for certain embodiments:

- Average % Plasticizer of Bottom Mix layer and the Top Mix layer (without the clear film): Range of 6.4% to 8.1%
- Average % Filler of Bottom Mix layer and the Top Mix layer (without the clear film): Range of 65.9% to 78.7%

- Average % Binder of Bottom Mix layer and the Top Mix layer (without the clear film): Range of 21.3% to 34.1%

[0042] By altering the percentages, the wear, flexibility and other performance characteristics of the floor panel 250, 350, 450 can be varied.

[0043] In certain embodiments, the floor panels 250, 350, 450 described herein are groutable floor panels or tiles meaning that the floor panels 250, 350, 450 are coupled together when being placed on the floor by using grout in joints between tiles. The floor panels 250, 350, 450 can be adhered to the floor using a thinset mortar, an epoxy, a mastic or any other type of adhesive material commonly used when tiling a floor. After adhering the floor panels 250, 350, 450 to the floor, grout can be used to fill in the gaps or spaces between the adjacent floor panels 250, 350, 450 to create a finished installed flooring product.

[0044] The exemplified embodiment is disclosed whereby three different floor panel sizes are positioned within a container and sold as a kit. However, the invention is not to be so limited and in other embodiments the kit may only include two different floor panel sizes, or the kit may include four, five or more different floor panel sizes.

[0045] As used throughout, ranges are used as shorthand for describing each and every value that is within the range. Any value within the range can be selected as the terminus of the range. In addition, all references cited herein are hereby incorporated by referenced in their entireties. In the event of a conflict in a definition in the present disclosure and that of a cited reference, the present disclosure controls.

[0046] While the invention has been described with respect to specific examples including presently preferred modes of carrying out the invention, those skilled in the art will appreciate that there are numerous variations and permutations of the above described systems and techniques. It is to be understood that other embodiments may be utilized and structural and functional modifications may be made without departing from the scope of the present invention. Thus, the spirit and scope of the invention should be construed broadly as set forth in the appended claims.

CLAIMS

WHAT IS CLAIMED IS:

1. A kit of floor panels comprising:
a container having an inner cavity containing a stacked assembly of floor panels;
the stacked assembly of floor panels comprising:
 one or more layers of first floor panels, each of the first floor panels
 having a first width and a first length;
 one or more layers of second floor panels, each of the second floor panels
 having a second width and a second length;
 one or more layers of a third floor panel, each of the third floor panels
 having a third width and a third length; and
 wherein the third width is different than the first and second widths and wherein the first
length is different than the second and third lengths.
2. The kit according to claim 1 wherein the stacked assembly further comprises two layers
of the first floor panels, four layers of the second floor panels and eight layers of the third floor
panels contained within the inner cavity of the container.
3. The kit according to any one of claims 1 to 2 wherein each layer of the first floor panels
includes four of the first floor panels, each layer of the second floor panels includes two of the
second floor panels, and each layer of the third floor panels includes one of the third floor panels,
and wherein each layer of the first, second and third floor panels has the same overall width and
length.
4. The kit according to any one of claims 1 to 3 wherein the first and second widths are the
same.
5. The kit according to any one of claims 1 to 4 wherein the second and third lengths are the
same.

6. The kit according to any one of claims 1 to 5 wherein the floor panels are positioned within the package in an upside-down stacked arrangement such that the one or more layers of the third floor panel are at a bottom of the package, the one or more layers of the second floor panels are stacked atop of a top layer of the one or more layers of third floor panels, and the one or more layers of the first floor panel are stacked atop of a top layer of the one or more layers of second floor panels.
7. The kit according to claim 1 wherein the first width and the first length are each about 200 mm, wherein the second width is about 200 mm and the second length is about 400 mm, and wherein the third width and the third length are each about 400 mm.
8. The kit according to any one of claims 1 to 7 wherein each layer of the first floor panels comprises four of the first floor panels, wherein each layer of the second floor panels comprises two of the second floor panels, and wherein each layer of the third floor panels comprises one of the first floor panels, and wherein each of the layers of the first, second and third floor panels has substantially the same overall width and length.
9. The kit according to claim 1 wherein the first floor panels, the second floor panels and the third floor panels are arranged on a floor in an opus pattern.
10. The kit according to claim 1 further comprising an instruction sheet positioned within the container, the instruction sheet containing instructions for positioning the first, second and third floor panels on the floor in an opus pattern.
11. A kit comprising:
 - a container containing:
 - a plurality of floor panels that can be arranged in an opus pattern;
 - the plurality of floor panels comprising:
 - a first set of floor panels having a first width and a first length;
 - a second set of floor panels having a second width and a second length; and
 - a third set of floor panels having a third width and a third length; and

wherein the first, second and third sets of floor panels are positioned in the package in a stacked arrangement.

12. The kit according to claim 11 wherein the container is a carton or box.

13. The kit according to any one of claims 11 to 12 wherein the first set of floor panels comprises two layers having four floor panels in each layer, wherein the second set of floor panels comprises four layers having two floor panels in each layer, and wherein the third set of floor panels comprises eight layers having one floor panel in each layer.

14. The kit according to any one of claims 11 to 13 wherein the first and second widths are the same and the third width is different than the first and second widths, and wherein the second and third lengths are the same and the first length is different than the second and third lengths.

15. The kit according to claim 14 wherein the first width is about 200 mm and the first length is about 200 mm, wherein the second width is about 200 mm and the second length is about 400 mm, and wherein the third width is about 400 mm and the third length is about 400 mm.

16. A method of packaging a plurality of floor panels comprising:

- a) providing an unfolded container;
 - b) positioning one or more layers of first floor panels on the unfolded container, wherein each of the one or more layers of the first floor panels comprises four of the first floor panels each having a first width and a first length;
 - c) positioning one or more layers of second floor panels atop a top layer of the first floor panels, wherein each of the one or more layers of the second floor panels comprises two of the second floor panels each having a second width and a second length;
 - d) positioning one or more layers of a third floor panel atop a top layer of the second floor panels, wherein each of the one or more layers of the third floor panel comprises one of the third floor panels having a third width and a third length;
 - e) folding the container around the layers of the first, second and third floor panels;
- and

f) flipping the carton so that the first, second and third floor panels are upside-down in the container.

17. The method according to claim 16 wherein the first and second widths are the same, the third width being different than the first and second widths, and wherein the second and third lengths are the same, the first length being different than the second and third lengths.

18. The method according to claim 17 wherein the first length is the same as the second width and wherein the second length is the same as the third width.

19. The method according to claim 18 wherein the first width, the first length and the second width are approximately 200 mm, and wherein the second length, the third width and the third length are approximately 400 mm.

20. The method according to claim 16 wherein step b) comprises positioning two layers of the first floor panels on the unfolded container, wherein step c) comprises positioning four layers of the second floor panels atop the top layer of the first floor panels; and wherein step d) comprises positioning eight layers of the third floor panel atop the top layer of the second floor panels so that eight of each of the first, second and third floor panels are positioned within the container.

21. A kit of floor panels comprising:

a container having an inner cavity containing a stacked assembly of floor panels;

the stacked assembly of floor panels comprising:

at least one first layer comprising four first floor panels, each of the first floor panels having a first width, a first length and a first area;

at least one second layer comprising two second floor panels, each of the second floor panels having a second width, a second length and a second area;

at least one third layer comprising a third floor panel, the third floor panel having a third width, a third length and a third area; and

wherein each of the first, second and third areas are different.

22. The kit according to claim 21 wherein the stacked assembly further comprises, in order from a bottom of the container to a top of the container:

eight third floor panels arranged in eight separate layers;

eight second floor panels arranged in four separate layers; and

eight first floor panels arranged in two separate layers.

23. The kit according to any one of claims 21 to 22 wherein the first width and the second width are the same, the third width being different than the first and second widths, and wherein the second length and the third length are the same, the first length being different than the second and third lengths.

24. The kit according to claim 21 wherein the stacked assembly of floor panels are configured to be arranged on a floor in an opus pattern.

25. The kit according to any one of claims 21 to 24 further comprising an instruction manual provided in the container, the instruction manual providing instructions for arranging the floor panels in the opus pattern.

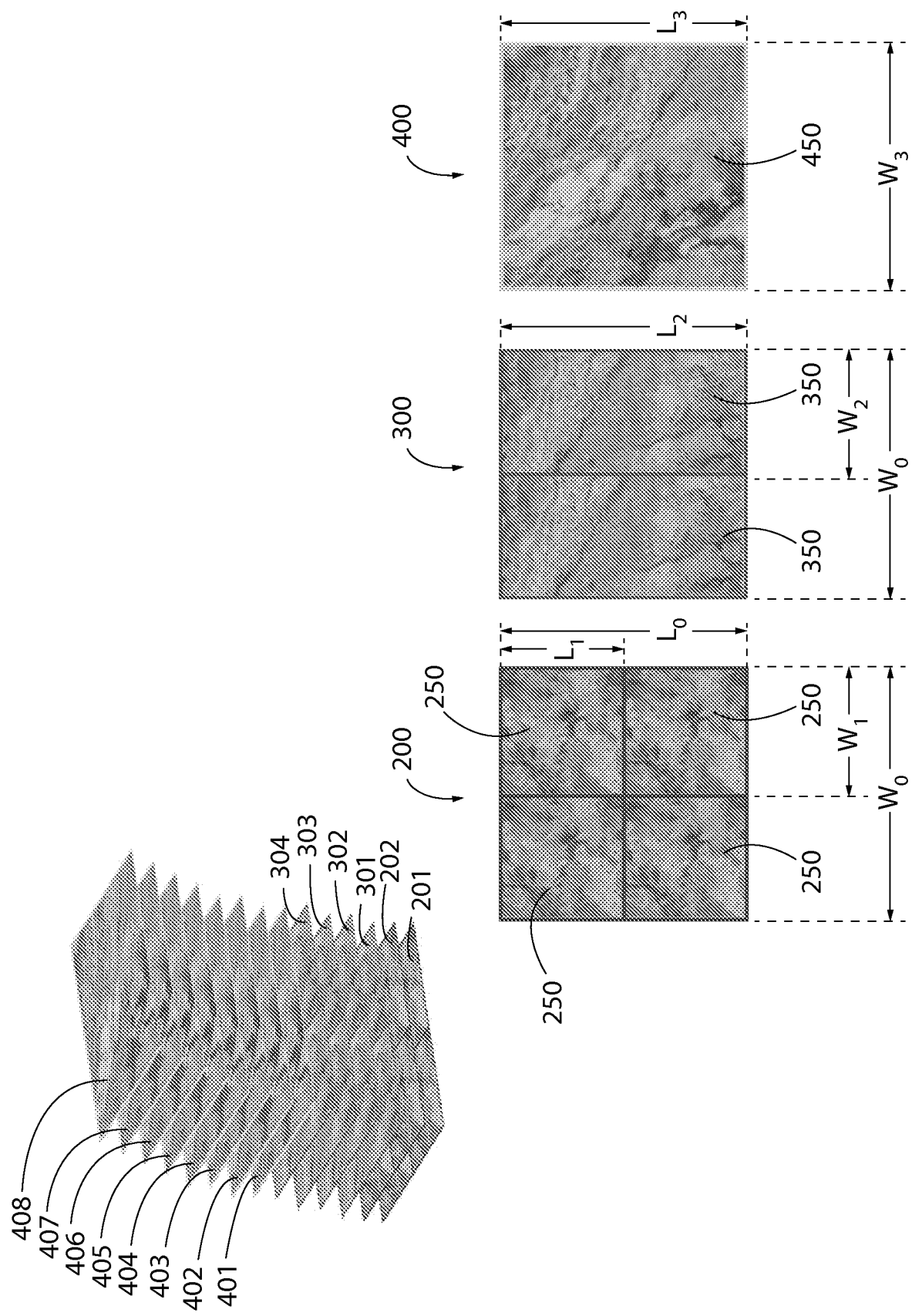


FIG. 1

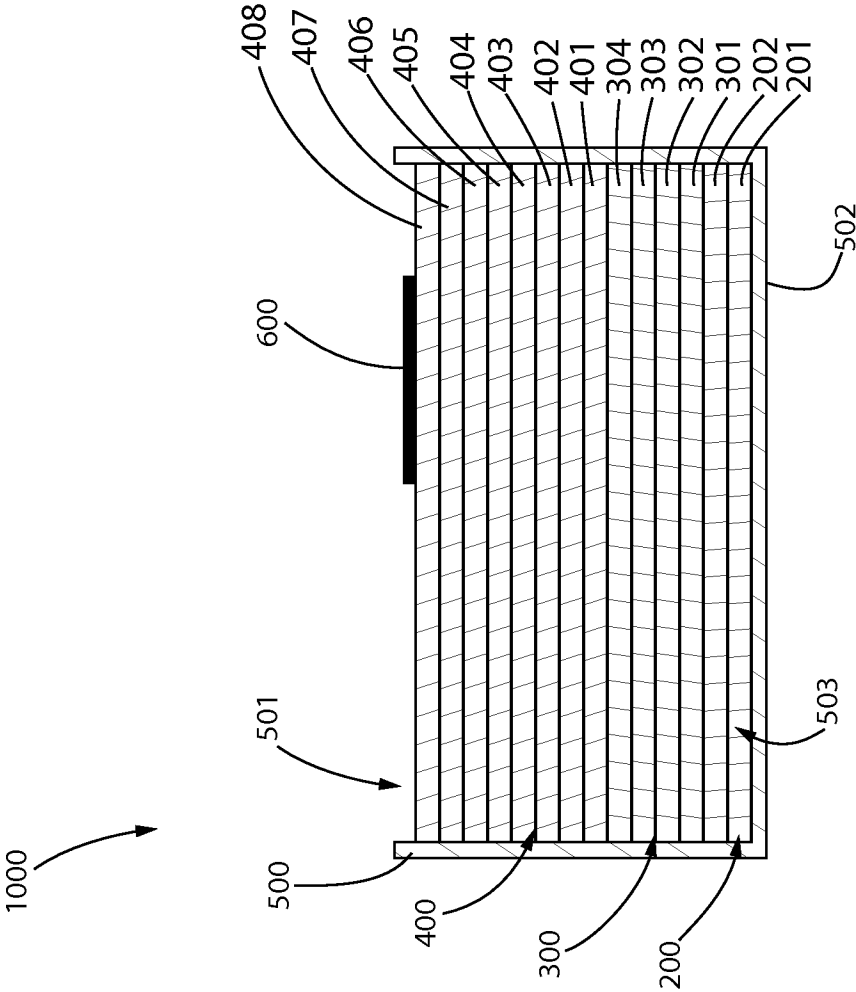


FIG. 2

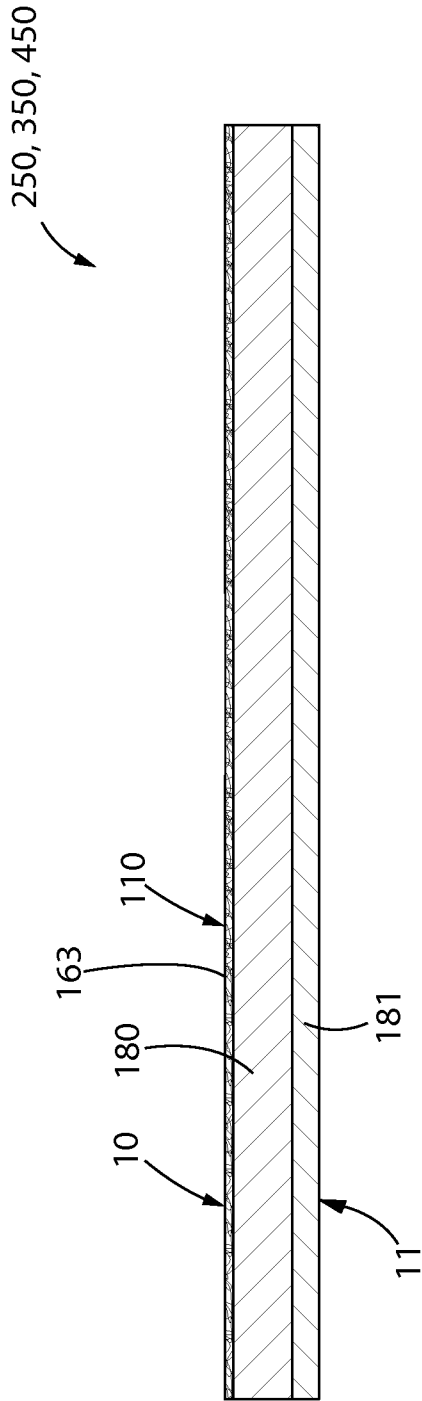


FIG. 3