Packaged set of panels, such as furniture, floor, ceiling and/or wall panels, consisting of a package, wherein this package is at least composed of, on the one hand, one or more panels (2), which, at least on one pair of opposite panel edges (3-4-5-6), comprise coupling parts (7-8-9-10), or tiles of a stone-like material, whether or not comprising coupling parts, and, on the other hand, a packaging (11), consisting of one or more packaging parts (12-13-14-15), characterized in that the package comprises at least one crumple zone (16).
Packaged set of panels.

This invention relates to a packaged set of panels, more particularly to packaged sets of furniture, floor, ceiling and/or wall panels.

There is a great diversity of materials for furnishing the interior of homes or office buildings, more particularly for furnishing floors, walls and/or ceilings. More particularly, for this purpose use is made of, amongst others, wood, natural stone, ceramic tiles, textile or synthetic material. Laminate products with possible imitation of the various aforementioned materials for furnishing floors, walls and ceilings are also possible and moreover have become especially popular. The introduction of innovating mechanically locking coupling systems, as known from WO 97/47834, for laminate products, with as their biggest advantage the easy installation, has been and still is a good reason for the success of these products. Moreover, laminate products are also applied in the furniture industry as an alternative for natural products, such as solid wood or veneer wood. More recently, also new mechanically locking coupling systems are applied for constructing furniture, as is known, amongst others, from WO 2010/070472. Mechanically locking coupling systems are also applied to solid wood or wood veneer panels. Further, as known from DE 203 10 959 U1, there are panels which comprise a veneer or wooden top layer having a thickness between 1 and 15 millimeters on top of a substrate composed of laths which substantially consist of softwood. There are also panels with a top layer of natural stone, bricks or ceramic material, as known from EP 1 441 086 A1 and WO 2010/122514, and this type of panels can be provided with mechanically locking coupling systems.

In this context, laminate means a product which is composed of different layers, wherein these layers consist of, for example, synthetic material, composite, paper or other materials. Mostly, a laminate comprises a carrier or substrate, such as a High Density Fiberboard (HDF) or a Medium Density Fiberboard (MDF), a printed or colored carrier, for example, printed paper, which represents the decor, and a top layer of synthetic material. Sometimes also an underlay is applied at the bottom side of the carrier. Laminate can be produced according to different methods and hereby leads to different types of laminate products, such as, for example, High Pressure Laminate (HPL), Direct Pressed Laminate (DPL) or Continuous Pressed
Laminate (CPL).

In the context of the present invention, panels are mentioned, intending a variety of panels with decorative surfaces. These panels are susceptible to damage, in particular during handling, storage and transport thereof. In particular, damage to the decorative surface and/or the panel edges, whether or, not provided with mechanically locking coupling systems, poses a problem.

At present, packaged sets of panels usually comprise cardboard packages, wherein the package encloses the set of panels like a box and only the visible side or the decorative side of the panels is left visible, such as known, amongst others, from WO 2006/103565. The whole of panels and package further can be enclosed by a transparent or translucent shrink film, which then also offers a certain protection for the decorative side. However, this package often turns out as inadequate for protecting the panels against damage as a result of shocks which possibly occur during transport, handling and storage of the packaged panels. In case a packaged set of panels falls down, the presently applied types of packaging in most cases offer insufficient protection for preventing damage to the panels. Moreover, for the consumer, when buying such set, it is invisible whether damage has occurred to one or more panels or not, as this possible damage mostly remains hidden in the package. It is noted that in particular, however, not exclusively, panels with mechanically locking coupling parts as well as the possible pertaining accessories are susceptible to damage.

Panels, such as furniture, floor, ceiling and/or wall panels are susceptible to damage or deformation during transport or during handling and storage thereof. In particular, however, not exclusively, panels with mechanically locking coupling systems are susceptible to damage. The packaging of a set of panels thus forms an important challenge, in consideration of the risk of the above-mentioned possible damage or deformation. A set of panels consists of one or more panels, which are taken together for the purpose of a common packaging. Apart from said panels, certain other goods, such as some accessories for floor panels, more particularly moldings, have the same problem of the risk of damage.

From DE 20 2004 019 391 U1 and EP 1 712 489 Al, it is known to provide a lid which is made in one piece with the package, by which the decorative side, too, is
protected further, for example, against scratches. Such package also offers poor view on possible damages of the packaged panels.

From DE 10 2006 020 619 A1, it is known to provide an indicator on the packaged set of panels, or on a pallet with a plurality of such packaged sets, wherein this indicator is able to indicate whether an excessive mechanical stress has taken place, by which a damage may have been occurred. In this manner, the seller or the consumer are warned of packaged sets of panels which possibly comprise one or more damaged panels.

From the already mentioned EP 1 712 489 A1, from BE 2010/0380 and from DE 20 2009 015 737 Ul, it is known to include, apart from floor panels, still other goods in such packaged sets, such as skirting boards, underlays or other accessories which can be applied together with the packaged panels, for example, for preparing the subfloor and/or for finishing the installed panels. These goods as such are subjected to damage with a possible maltreatment of the packaged sets of panels.

Further, it is important that the package of a set of panels fulfills certain functional requirements, such as the possible identification of the panel type or the appearance of the decorative side of the packaged panel, or such as the bundling of a certain amount of panels according to specific dimensions, such that a packaged set is obtained with a practical sum of the usable surface area. Further, using as little packaging material as possible is important for environmental reasons.

According to its different aspects, the present invention aims primarily at an alternative packaging which, according to preferred embodiments, can offer a solution to one or more problems of the present state of the art.

To this aim, the invention, according to its first aspect, relates to a packaged set of panels, such as furniture, floor, ceiling and/or wall panels, consisting of a package, wherein this package is at least composed of, on the one hand, one or more panels, which, at least at one pair of opposite panel edges, comprise coupling parts; or tiles of a stone-like material, whether or not comprising coupling parts, and, on the other hand, a package consisting of one more packaging parts, with the characteristic that the package comprises at least one crumple zone. This crumple zone has the advantage that it offers improved protection against possible damage or
deformation to the packaged panels.

It is noted that the aforementioned panels in most cases are rectangular; however, the present invention is in no way restricted to rectangular panels only. In general, also panels may be used having a shape according to a regular hexagon, a triangle, a square or any other type of polygon and thus are intended by the general term of panels. Further, the panels according to the invention comprise coupling parts on at least one pair of opposite panel edges.

It is clear that a panel has a front and rear side and moreover is characterized by a number of panel edges. In the most common case of rectangular panels, four panel edges can be identified. More particularly, in the case of rectangular panels, it is referred to two long panel edges and two short panel edges. Further, in the case of rectangular or square panels, it is referred to a pair of opposite panel edges.

Said panels can comprise coupling parts on one or more pair of opposite panel edges. Coupling parts can be brought into each other and allow bringing two of such panels in a coupled condition. Thus, the coupling parts allow a cooperation between different panels.

Further, it is noted that panels can comprise coupling parts of different nature. For example, the panels can comprise specific coupling parts providing for a horizontal as well as for a vertical locking of the panels. The vertical direction is the direction perpendicular to the plane of the panels, and the horizontal direction is the direction perpendicular to the panel edges and in the plane of the panels. As another example, panels can comprise coupling parts which only provide for a vertical locking, such as it is the case with panels with a simple tongue and groove connection. In the case of, for example, furniture panels, by the term "coupling parts" a variety of types of connection elements has to be understood, amongst which coupling parts in the form of edge profiles, as known, for example, from WO 2010/070472, as well as coupling parts consisting of pre-assembled elements, such as dowels, so-called Minifix elements, pins and the like. The coupling parts in the case of furniture panels provide for a locking coupling of two panels for forming a corner connection of the piece of furniture. In this case, the coupling parts of the furniture panels provide for a locking coupling between the panels. For example, in the case of a typical right-angled corner connection of two panels, the coupling parts provide for
a locking in two orthogonal directions according to the planes of the respective panels.

According to the invention, the package of the packaged set of panels further comprises a packaging. This packaging generally consists of one or two packaging parts. More particularly, this packaging consists of folded parts. The material which primarily comes into consideration for the packaging is cardboard or corrugated cardboard. However, the present invention is in no way limited to cardboard as a packaging material, but also contemplates possible embodiments wherein other materials, such as synthetic material, styrofoam or even cast or injected thermoplastic materials are applied as packaging material.

The particularity of the present invention according to its first aspect consists in that a packaged set of panels or package is provided, wherein the package comprises at least one crumple zone. This crumple zone has the advantage of offering a better protection against possible damage or deformation to the packaged panels. Preferably, this relates to a crumple zone which forms part of a packaging part which is realized as a cap which is provided over an edge of the set of panels. By "an edge of the set of panels", a side is meant which is formed by panel edges lying on top of each other. Said crumple zone has the advantage of offering a better protection against possible damage or deformation to the packaged panels.

The present invention shows its benefits best when such crumple zone is applied along at least one of the panel edges. In this manner, it is obtained that said problem of the risk of damage is reduced. In fact, the panel edges are most susceptible to damage. Preferably, however, not exclusively, the crumple zone is provided along a pair of opposite panel edges comprising coupling parts. This characteristic has the advantage that it enables an improved protection for the packaged panels and more in particular limits the possible damage to the panel edges.

Preferably, said crumple zone forms part of at least one of said packaging parts. The crumple zone preferably forms part of a packaging part which is situated on the exterior side of the packaged set of panels. In other words, the crumple zone is made in one piece with an outermost part of the package. Herein, a possible film is not taken into consideration. Integrating the crumple zone into one of the packaging parts further allows constructing an efficiently packaged set of panels both from an
economic and ecological point of view. In fact, hereby less material is used in comparison with a possible embodiment in which the crumple zone is not integrated into one of the packaging parts, but forms a separate part of the package. According to the present invention, said crumple zone possibly can be integrated in a packaging part which is realized as a cap.

Preferably, said crumple zone is composed of a folded structure. This preferred characteristic of the first aspect of the present invention allows providing a deformable structure in the packaged set of panels, which, with a possible impact as a consequence of, for example, a fall, absorbs at least part of the impact energy by the deformation or by the crumpling of the folded structure. This folded structure preferably is formed of packaging material, such as, for example, folded cardboard. In the case of folded cardboard, by this folded structure a structure is meant which is formed by folding the cardboard over one or more folding lines. This cardboard as such can be realized single- or multi-layered. However, by said folded structure by no means the corrugated structure inside multi-layered cardboard is meant, as it is present, for example, in corrugated cardboard. However, the folded structure as such can be realized from corrugated cardboard.

Preferably, the folded structure defines one or more hollow spaces, which may or may not be open towards the outside. The preferred characteristic of the first aspect of the present invention allows keeping a hollow space free within the package, by which the edges of the panels are kept at a certain distance from the exterior of the package.

Preferably, said folded structure comprises at least a first wall defining a first surface, wherein this surface extends along one of the edges of the panels and wherein said wall comprises one or more wall parts, which are folded, over a folding line, out of said surface towards the interior of the package. This preferred characteristic of the first aspect of the present invention allows realizing said folded structure with as little material as possible. In particular, this characteristic further allows offering a solution to said problem of the risk of damage of the packaged panels.

Preferably, said folded structure comprises at least a second wall, which defines a second surface and extends transverse to the first wall and in this manner forms an
outer corner of the package, wherein both walls comprise wall parts which are folded, over a folding line, out of the respective surfaces towards the interior of the package and in this manner form an inner corner. This preferred characteristic of the first aspect of the present invention allows forming a stop or support surface for the edges of the panels, such that the exterior of the packaged set of panels is situated at a certain distance from the edges of the panels.

Preferably, said wall part of said first wall rests against one of the walls of the folded structure. This preferred characteristic of the first aspect of the present invention allows constructing a more stable folded structure.

Preferably, said wall part is further secured to the panel by applying one or more glue connections. This preferred characteristic of the first aspect of the present invention allows further stabilizing or reinforcing the folded structure.

Preferably, said crumple zone forms part of a packaging part which is realized as a cap which is provided over an edge of the set of panels. Said cap is characterized by a U-shaped cross-section. Herein, it is noted that the U-shaped profile does not necessarily have to be symmetrical. Or, in other words, the two legs of the U-shaped profile can have a different length. This preferred characteristic of the first aspect of the present invention provides for that the packaged set of panels can be provided with a crumple zone by an easily to provide cap over an edge of the set of panels.

In the most preferred embodiment of the present invention according to its first aspect, the crumple zone forms part of a packaging part which is realized as a cap which is provided over the edge of the set of panels. In this embodiment, the crumple zone further is constructed of a folded structure which comprises two walls which define two respective surfaces. These walls comprise wall parts which are folded, over a folding line, out of the respective surfaces towards the interior of the package and in this manner form an inner corner. Herein, said inwardly folded wall parts rest against one of the walls of the folded structure. In this most preferred embodiment, these wall parts are secured to the package by means of a glue connection.

It is noted that providing such crumple zones is of particular interest with panels
wherein the decorative side thereof extends up to the outermost edge part.

Further, it is noted that the present invention can be applied to packaged sets of tiles of a stone-like material, whether or not realized with coupling parts, more particularly natural stone tiles, ceramic tiles, tiles provided with a ceramic top layer, concrete tiles, cement tiles and the like.

According to a second aspect, the invention aims at the packaging of panels, wherein the decorative side thereof extends up to the outermost edge part or approximately to the outermost edge part. Such panels are highly damageable at the height of the edges. Thus, the second aspect of the invention aims at a solution for packaging these damageable panels in an expedient manner. To this aim, the present invention, according to an independent second aspect, relates to another set of panels, such as furniture, floor, ceiling and/or wall panels, consisting of a package, wherein the package is at least composed of one or more panels, which at least on one pair of opposite panel edges comprise coupling parts and wherein a decorative side of the panel at least on one panel edge extends up to the outermost edge part of the panel or alternatively up to a distance of less than 1 millimeter thereof; as well as of a packaging, consisting of one or more packaging parts, with the characteristic that the package comprises at least one protection zone and this protection zone is situated at least along the last-mentioned respective panel edge of the set of panels. This protection zone has the advantage that it offers an improved protection against possible damage or deformation to the packaged panels.

By outermost edge part of the panel, the extremity of the panel edge is meant which is situated most distal, or most outward, in horizontal direction.

It is important to note that this aspect of the present invention is particularly interesting for packaging panels which, at least one pair of opposite panel edges, are provided with coupling parts which allow a locking coupling by means of a downward movement of the one panel in respect to the other, also known by the denomination of "Push-Lock". A locking coupling by a downward movement is known, amongst others, from WO 2009/066153 and is represented in particular in figure 25 of said document. Most panels provided with Push-Lock coupling parts are characterized, amongst others, in that the decorative side of these panels extends up to the outermost edge part, or up to a very small distance from the outermost
edge part, namely less than 1 millimeter. Panels provided with said Push-Lock coupling parts are characterized by the problem of the risk of damage, more particularly damage to the decorative side and to the panel edge with coupling part. Push-Lock coupling parts typically comprise a small tongue or edge portion, which possibly does not protrude much in respect to the decorative side, by which, with a possible fall of the panel, this possibly not much protruding tongue or edge portion is completely pushed in and in this manner the decorative side of the panel becomes damaged as well.

Preferably, said protection zone is constructed of one or more deformable packaging elements and possibly one or more buffer spaces. This preferred characteristic of the second aspect of the present invention provides for that the packaged set of panels can be provided with a protection zone by using a minimum of material for this purpose.

Preferably, said deformable packaging elements are elastically deformable. This preferred characteristic of the second aspect of the present invention provides for that the packaged set of panels can be provided with a protection zone by making use of material which has the right features for protecting the packaged panels in case of a possible impact of the packaged set of panels as a result of, for example, a fall.

It is important to note that the protection zone of the second aspect of the present invention can be performed as the crumple zone described by means of the first aspect.

According to a third aspect, the invention aims at a packaging which is of interest for a more stable stacking of a plurality of packaged sets of panels.

To this aim, the invention, according to its independent third aspect, relates to a packaged set of panels, such as furniture, floor, ceiling and/or wall panels, consisting of a package, wherein this package is at least composed of one or more panels, which, at least on one pair of opposite panel edges, comprise coupling parts; as well as of a packaging, with the characteristic that the packaging consists of at least two separate folded packaging parts, which substantially extend along all edges of the set of panels. This aspect of the invention has the advantage that the
component parts of the packaging can be developed independently from each other and each part can be optimized individually.

According to a preferred embodiment, said packaging consists of at least four separate folded parts. Still better, the aforementioned different folded parts of the packaging provide for a substantially open front and rear side of the packaged set of panels. This characteristic of the invention has the advantage that it allows an easy identification of the type of panel and/or of the appearance of the visible side of the packaged panels. Moreover, this has the advantage of being able to form a packaging which does not require a lot of packaging material.

Preferably, the packaging provides support surfaces on the front as well as the rear side of the set of panels on each edge of the packaged set of panels in the plane perpendicular to the stacking direction of the packaged set of panels. This has the advantage that the packaged sets of panels can be stacked better. Further, this characteristic offers the advantage of offering an increased protection against damage and in particular against deformation of the panels during handling, transport and/or storage.

According to the third aspect of the invention, the packaging is substantially employed on each two opposite edges of the set of panels and preferably as respectively two similar or still better identical packaging parts. According to a preferred embodiment, said packaging substantially consists of folded cardboard. This allows applying the packaging in an easy and cost-efficient manner.

According to all aspects of the present invention, said packaging comprises a film which preferably is transparent or substantially transparent. More particularly, a shrink film can be applied, wherein according to a particular preferred embodiment a copolymer film is applied. The inventor has found that applying a copolymer film results in an improved stability of a plurality of packaged sets of panels stacked one upon the other, or, in other words, vertically stacked. This has the advantage that packaged sets of panels during transport or handling will slide less over each other, in horizontal direction, when the stack of packaged sets of panels is exposed to accelerating forces with horizontally directed component, i.e. orthogonal to the stacking direction, which typically occurs during, for example, transport via trucks. It is clear that this characteristic of the invention is not restricted to packaged sets of
panels, as described above, but that also sets of any other type of panels can be packaged in this manner. Applying a transparent film further also has the advantage that it allows an easy identification of the type of panel and/or of the appearance of the visible side of the packaged panels.

According to a fourth aspect, the invention aims at a packaging for panels which is particularly useful in its use.

To this aim, the invention, according to its independent fourth aspect, relates to a packaged set of panels, such as floor, ceiling and/or wall panels, consisting of a package, wherein this package is at least composed of two or more panels, which, at least on one pair of opposite panel edges, comprise coupling parts; as well as of a packaging, with the characteristic that the sum of the usable surface area of all panels present in the package is one square meter, with a margin of less than 5 percent, and preferably less than 2 percent and best less than 1 percent, wherein this preferably relates to a positive margin.

This fourth aspect has the advantage that the packaged set of panels corresponds to an easy sum of the useful surface areas of the panels in coupled condition. This has the advantage that consumers easily can determine the amount of required packaged sets of panels and also can easily calculate the total price of this amount of packaged sets of panels. Mostly, the price of panels in fact is expressed in a price per square meter.

Instead of being one square meter, the sum of the usable surface areas can also be 10 square feet (or 0.92 square meters), this for the countries where the British-American metrics are applied.

It is clear that the crumple zone, as in the first aspect of the present invention, can also be applied for packaging other goods, such as, amongst others, accessories for floor, ceiling and/or wall panels, or more particularly moldings, such as, for example, skirting boards.

The first, second, third and/or fourth aspect of the present invention can be combined in a single embodiment.
Due to their typical elongated shape and dimensions, moldings are particularly susceptible to damage, whether or not during transport. Thus, in this context a packaging is desirable which provides additional protection. When in particular such moldings are provided with a pre-formed miter surface at one or both extremities, these moldings hereby are rendered extra susceptible to damage. More particularly, a molding is susceptible to damage of the decorative side where the latter continues to the outermost edge of the extremities on edges of moldings.

Therefore, the present invention, according to its fifth independent aspect, provides a packaged set of moldings consisting of a package, wherein this package is at least composed of one or more moldings, which preferably comprise a pre-formed miter surface on at least one extremity, and also consisting of a packaging, consisting of one or more packaging parts, with the characteristic that the package comprises at least one crumple zone. Said crumple zone has the advantage that it offers improved protection against possible damage or deformation to the packaged moldings.

According to a preferred embodiment, said crumple zone forms part of at least one of said packaging parts and said crumple zone is constructed of a folded structure which defines one or more, whether or not open, hollow spaces. This preferred characteristic of the fifth aspect of the present invention allows providing a deformable structure in the packaged set of moldings, which, with a possible impact as a consequence of, for example, a fall, absorbs at least part of the impact energy by the deformation or by the crumpling of the folded structure. Further, this has the advantage that it allows realizing said folded structure with as little material as possible. This preferred characteristic of the present invention further allows forming a stop or support surface for the extremities of the moldings, such that the exterior of the packaged set of moldings is situated at a certain distance from the extremities of the moldings.

Preferably, said folded structure comprises at least two walls with respective surfaces which extend along the longitudinal direction of the set of moldings and that these walls comprise wall parts, which are folded, over a folding line, out of the respective surfaces towards the interior of the package and in this manner form an inner corner. This preferred characteristic of the fifth aspect of the present invention allows realizing said folded structures with as little material as possible. In
particular, this characteristic further allows reducing said problem of the risk of damage to the moldings.

Preferably, said inwardly folded wall parts follow the shape of the pre-formed miter surface. This preferred characteristic of the fifth aspect of the present invention allows to better stabilize the packaged set of moldings in the package and also letting the damageable pre-formed miter surface of the moldings cooperate better with said folded structure. This preferred characteristic further also allows realizing said folded structure with as little material as possible.

Preferably, said at least one of said wall parts is secured to the package by means of one or more glue connections. This preferred characteristic of the fifth aspect of the present invention allows further stabilizing or reinforcing the folded structure.

Preferably, said crumple zone forms part of a packaging part which is realized as a cap which is provided over said extremity, with a pre-formed miter surface. This preferred characteristic of the fifth aspect of the present invention provides for that the packaged set of moldings can be provided with a crumple zone by an easy to provide cap over an extremity of one or more packaged moldings.

In the most preferred embodiment of the present invention according to its fifth aspect, the package comprises two crumple zones and each crumple zone forms part of a packaging part which is realized as a cap which is provided over both extremities, with preferably a pre-formed miter surface. In this most preferred embodiment, further said packaging part is constructed of a folded structure which comprises four walls with respective surfaces which extend along the longitudinal direction of the set of moldings and that three of these four walls comprise wall parts which are folded, over a folding line, out of the respective surfaces towards the interior of the package and in this manner form an inner corner. In this most preferred embodiment, further said inwardly folded wall parts follow the shape of the pre-formed miter surface and said wall parts are secured to the package by means of glue connections.

With the intention of better showing the characteristics of the invention, hereafter, as an example without any limitative character, some preferred embodiments are described, with reference to the accompanying drawings, wherein:
Figure 1 in perspective schematically represents a view of a packaged set of panels according to the first aspect of the present invention; Figure 2 in perspective and in top view represents a practical embodiment of a packaged set of panels, amongst others, according to the first aspect of the present invention; Figure 3 in perspective represents the bottom view of the embodiment of figure 2; Figure 4, at a larger scale, represents the cross-section according to the line IV-IV from figure 2; Figure 5, at a larger scale, represents the cross-section according to the line V-V from figure 2; Figure 6, at a larger scale, represents the cross-section according to the line VI-VI from figure 2; Figures 7 and 8 represent, in folded-open condition, the packaging parts which are indicated in figure by arrows F7 and F8, respectively; Figure 9 in perspective schematically represents a view of a packaged set of panels according to the second aspect of the present invention; Figure 10 represents a cross-section of a first possible embodiment of a packaged set according to the second aspect of the present invention; Figure 11 represents a cross-section of a second possible embodiment of a packaged set according to the second aspect of the present invention; Figure 12 in perspective schematically represents a view of a packaged set of moldings according to the fifth aspect of the present invention; Figure 13, at a larger scale, represents one extremity of the packaged set of moldings of figure 12.

Figure 1 schematically shows a package or a packaged set of panels 1 according to the first aspect of the present invention. This relates to a possible embodiment of a packaged set of panels 1, which in this example comprises four panels 2 with a rectangular shape. It is clear that the package according to other embodiments may also comprise another number of panels or possibly a single panel only. These panels 2 are characterized by four panel edges 3-4-5-6, which form two pairs of opposite panel edges 3-4 and 5-6. In the example of the represented rectangular panels, one can speak about a pair of short panel edges 3-4 and a pair of long panel edges 5-6. Further, the panel edges 3-4-5-6 in this example also comprise coupling
parts 7-8-9-10. The represented package from figure 1 further is composed of a packaging 11, consisting of a plurality of packaging parts, in this example four packaging parts 12-13-14-15, wherein the package in this example comprises two crumple zones 16. These offer increased protection to the packaged panels 2. In this sketch, the packaging 11 is partially opened at the side for being able to show the four panels 2. At the height of this opening in the packaging 11, for clarification the panels 2 have also been cut through.

Figure 2 in perspective shows a possible embodiment of the packaged set of panels 1 according to the present invention. In this embodiment, this relates to a packaged set of panels 1, more particularly two rectangular panels 2, consisting of a package. The represented package from figure 2 further is composed of a packaging 11, consisting of four packaging parts 12-13-14-15, and comprises two crumple zones 16. The packaging 11, as shown in this figure, is substantially composed of folded cardboard. Further, the represented packaging 11 is substantially realized as identical packaging parts 12-13 and 14-15 on each two opposite panel edges 3-4 and 5-6, at least in respect to the shape or basic form thereof. Further, the represented packaging 11 provides support surfaces 17 on the front side 18 of the packaged set of panels 1. The represented possible embodiment further shows a substantially open front side 18 of the packaged set of panels 1.

Figure 3 in perspective shows a bottom view of the embodiment of figure 2. In this view the two crumple zones 16 are shown, wherein it is clear that each crumple zone 16 is constructed of a folded structure 19, which forms part of the respective packaging part 12-13. This folded structure 19 comprises a first wall 20 and a second wall 21. Further, the folded structure 19 forms an outer corner 22 of the package. Said walls 20-21 further comprise wall parts 23-24, which are folded, over a folding line 25, out of the respective surfaces towards the interior of the package and hereby form an inner corner 26. According to this preferred embodiment, said wall part 23 of the first wall 20 rests against one of the walls of the folded structure 19. According to the represented embodiment, said packaging parts 12-13 with crumple zone 16 are realized as a U-shaped cap 27. The represented possible embodiment provides for a substantially open rear side 28 of the packaged set of panels 1. Finally, the represented example in figure 3 shows the characteristic that the packaging 11, apart from said packaging parts 12-13-14-15, also comprises a film 29. Preferably, this relates to a shrink film, which in this case is provided as
the last substantial part of the packaging 11 and keeps the package together as a whole. Moreover, said film 29 is preferably transparent or substantially transparent, by which the panels packaged in the package remain visible and identifiable. In this figure, the film 29 is partially opened for a better representation of the construction and the different characteristics of the packaged set of panels 1. The packaging 11 from figures 2 and 3 also forms an example of a possible embodiment according to the third aspect of the present invention, as the represented example shows the characteristic that the packaging 11 consists of four folded parts, in this case the aforementioned four packaging parts 12-13-14-15, which extend along all panel edges 3-4-5-6. Further, the represented packaging 11 provides support surfaces 30 on the rear side 28 of the packaged set of panels 1.

Figures 4 and 5 in cross-section represent the two crumple zones 16. The crumple zones 16 form part of the packaging parts 12-13. In figure 4 is represented how in this embodiment the crumple zones 16 extend along the panel edges 3 and 4 of the two packaged panels 2. Further, it is also represented that the panel edges 3-4 comprise coupling parts 7-8. These coupling parts 7-8 substantially are realized as a male coupling part 7 and a female coupling part 8. Further, the coupling parts 7-8 are of the type allowing that two of such panels 2 at said panel edges 3-4 can at least be connected to each other by pressing down one of these panels with the pertaining male coupling part 7 in the female coupling part 8 of the other panel by a downward movement of the male coupling part 7 towards the female coupling part 8. This manner of connecting is known better by the English denomination "Push-Lock". In the represented example, it is also possible to connect the panel edges 3-4 to each other by a turning movement of the panels 2 along the respective panel edges 3-4 or via a substantially horizontal shifting movement of the respective panel edges 3-4 towards each other. Such connections are known better by the respective English denominations "Angle" connections and "Snap" connections. In the represented example, said coupling parts 7-8 of the panels 2 are provided with locking parts 31-32, which, in coupled condition of the panels 2, provide for a locking in vertical direction, and with locking parts 33-34, which, in coupled condition of the panels 2, provide for a locking in horizontal direction H. These locking parts 31-32, 33-34 are indicated in figure 5.

In the embodiment of figures 4 and 5, the crumple zones 16 form part of the packaging parts 12-13, and these packaging parts with crumple zone are
constructed of a folded structure 19. Herein, this folded structure 19 forms a hollow space 35, which, at the height of the represented cross-section of figure 4, is open. The open hollow space 35 namely shows an opening towards the exterior of the package. Herein, a possibly applied film 29 has to be disregarded. As represented in figure 4, the folded structure 19 comprises a first wall 20 with a first surface which extends along the stacked upon each other panel edges 3 and along the opposite stacked upon each other panel edges 4. The folded structure 19 in figure 4 further comprises a second wall 21 with a surface which extends transverse to the first wall 20 and in this manner forms an outer corner 22 of the package. The two walls 20-21 comprise wall parts 23-24, which are folded, over a folding line, out of the respective surfaces towards the interior of the package and in this manner form an inner corner 26. Herein, said wall part 23 of the first wall 20 rests against one of the walls of the folded structure 19. Said inwardly folded wall part 23 possibly can be secured to the package by means of one or more glue connections 36.

In figure 5, the two crumple zones 16 can be seen in another cross-section. In the cross-section concerned, the hollow space 35 is closed towards the exterior of the package.

In figure 6 is represented how the packaging parts 14-15 of the packaging 11 extend along the panel edges 5-6, more particularly along the long panel edges of the packaged set of panels. The panel edges 5-6 also comprise coupling parts 9-10. According to this possible embodiment, no crumple zone is provided along the represented long panel edges 5-6.

According to the represented embodiment in figure 2, a crumple zone 16 is provided along one pair of opposite panel edges 3-4. As can be seen in the cross-section of figure 6, the packaging parts 14-15 are constructed of folded packaging material.

The example represented in the figures 2 to 6 is also an example of the second aspect of the present invention, wherein a protection zone 37 is realized as a crumple zone 16.

Figures 7 and 8 respectively show how the packaging parts 12 and 14, and thus also 13 and 15, can be realized from flat packaging material, more particularly
cardboard, for example, by a punch operation, after which they exclusively have to be folded into the final shape and possibly can be secured by means of glue connections. Figure 8 schematically also shows how a plurality of packaging parts 14 and/or 15 can be realized from the flat packaging material with a minimum loss of material. As schematically also represented in figures 7 and 8, preferably a number of pre-formed folding lines 25 will be formed in the packaging parts for facilitating the folding process. In practice, such folding lines 25 can be of any kind and can be formed, for example, by impressions as well as by partial incisions.

Figure 9 schematically shows a packaged set of panels 1 according to the second aspect of the present invention. This relates to a possible embodiment of a packaged set of panels 1, which in this example comprises four panels 2 of rectangular shape. It is clear that according to another embodiment the package may also comprise another number of panels or possibly a single panel only. In this sketch, the packaging 11 has been partially opened at the side for being able to show the four panels, and is partially opened at one of the two protection zones 37 for being able to show the construction thereof. The panels 2 are characterized by four panel edges 3-4-5-6, which, in the example of figure 9, form two pairs of opposite panel edges 3-4 and 5-6. In the example of rectangular panels, one can speak about a pair of long panel edges 5-6 and a pair of short panel edges 3-4. The represented package of figure 9 further is composed of a packaging 11, consisting of a plurality of packaging parts 12-13-14-15 with, in the example shown, the characteristic that the package comprises two protection zones 37. In this example, the protection zone 37 is constructed of two deformable packaging elements 38 as well as a buffer space 39. According to a possible preferred embodiment, these deformable packaging elements 38 are elastically deformable.

Figure 10 illustrates a cross-section of a possible embodiment of the packaged set of panels with the characteristics of the second aspect of the present invention. In the example of figure 10, the package comprises two panels 2. Further, the short panel edges 3-4 in this example also comprise coupling parts 7-8. These coupling parts 7-8 substantially are realized as a male coupling part 7 and a female coupling part 8. The coupling parts 7-8 of the panels 2 preferably are provided with locking parts. In coupled condition of the panels 2, the locking parts 31-32-33-34, as in the example of figure 10, provide for a locking in vertical direction V and in horizontal direction H, and wherein said coupling parts 7-8 are of the type allowing that two of
such panels 2 can at least be connected to each other at said panel edges 3-4 by pressing down one of these panels with the pertaining male coupling part 7 in the female coupling part 8 of the other panel by means of a downward movement of the male coupling part 7 towards the female coupling part 8. This manner of connection is known better by the English denomination "Push-Lock". In the example shown, it is also possible to connect the panel edges 3-4 to each other by a turning movement of the panels along the respective panel edges 3-4 or by means of a substantially horizontal shifting movement of the respective panel edges 3-4 towards each other. Such connections are known better by the respective English denominations of "Angle" connections and "Snap" connections. Further, the possible embodiment of figure 10 is characterized by a decorative side 40 of the panel 2, which on one panel edge 3 extends up to the outermost edge part 41 of the panel. Alternatively, the decorative side 40 of the panel can extend up to a small distance from the outermost edge part 41 of the panel, as shown in figure 11. The represented embodiment in figure 10 comprises two protection zones 37 along the panel edges 3-4 of the panels 2, which are constructed of deformable packaging elements 38. On the left-hand side of the represented cross-section, said protection zone 37 is situated where said decorative side 40 of the panel 2 extends up to said outermost edge part 41 of the panel. Possibly, this protection zone 37, apart from said deformable packaging elements 38, also comprises buffer spaces 39, as shown in figure 9. However, these buffer spaces 39 are not strictly necessary. According to a preferred embodiment, said deformable packaging elements 38 can be realized with elastically deformable material. In figure 10, a possible embodiment of the present invention can be seen with panels with Push-Lock coupling parts. In this example, the coupling part 8 comprises a separate synthetic material strip 42 which provides for a locking in vertical direction V of the panels. In the represented example, said separate synthetic material strip 42 is provided in the female coupling part 8 which is located on the right-hand side of the cross-section. The male coupling part 7, which can be seen on the left side of the cross-section, can be brought into the female coupling part 8 by means of a downward movement.

In the example of figure 11, the package comprises two panels 2, which comprise coupling parts 7-8 and wherein the decorative side 40 of the panel on one panel edge 3 extends up to a small distance D from the outermost panel edge 41 of the panel 2. This small distance D typically is smaller than 1 millimeter for the type of Push-Lock coupling parts wherein the outermost edge part 41 does not protrude
much in respect to the decorative side 40. The decorative side 40 of panels with said type of Push-Lock coupling parts is also susceptible to damage. The represented embodiment of the packaged set of panels in figure 11 comprises two protection zones 37 along the panel edges 3-4 of the panels 2, which zones are constructed of deformable packaging elements 38. On the left-hand side of the represented cross-section, said protection zone 37 is situated at the height of said decorative side 40 of the panel 2, which extends up to a small distance D from said outermost edge part 41 of the panels 2.

Figure 12 in perspective shows a sketch of a possible embodiment of the packaged set of moldings 43 according to the fifth aspect of the present invention. In this embodiment, this relates to a packaged set of moldings 43, more particularly with in this example one molding 44, consisting of a package. The represented package from figure 12 is composed of a packaging 11 consisting of a plurality of packaging parts 12-13, with the characteristic that the package comprises two crumple zones 16. According to a preferred embodiment, as shown in this figure, the packaging 11 is substantially composed of folded cardboard. The represented crumple zones 16 are constructed of a folded structure 19 which defines a plurality of hollow spaces 35. The represented packaging 11 further is substantially applied on each two opposite edges or extremities 45-46, as two identical packaging parts 12-13, which in the represented example are provided as a cap 27 over the extremities 45-46 of the molding 44.

In figure 13, at a larger scale one extremity 45 is represented of the packaged set of moldings 43 of figure 12, wherein one packaging part 12 was displaced, such that the construction of the package and the characteristics of the packaged set of moldings 43 can be shown better. Further, the possible embodiment of figure 13 shows the characteristic that the folded structure 19 comprises two walls 47-48 with respective surfaces which, in the represented example, extend along the longitudinal direction of the molding 44, and that said walls 47-48 comprise wall parts 49-50, which are folded, over a folding line 25, out of the respective surfaces towards the interior of the package and in this manner form an inner corner 26. The represented example also shows the characteristic that the wall part 50 follows a pre-formed miter surface 51 on the extremity 45 of the molding 44. It is clear that packaging parts with such walls 47-48 and wall parts 49-50 can also be applied within the scope of the remaining aspects of the present invention, more
particularly with the first and/or the second aspect.

The present invention is in no way limited to the herein above-described embodiments; on the contrary, such packaged sets of panels can be realized according to various variants, without leaving the scope of the present invention. So, for example, instead of cardboard as a material for the packaging parts, also other materials can be applied, such as synthetic material, styrofoam or even cast or injected thermoplastic materials. Instead of packaging with packaging parts comprising folded parts, in the case of some other types of packaging materials this packaging may comprise packaging parts in which the circumference comprises a bent edge.
Claims.

1.- Packaged set of panels, such as furniture, floor, ceiling and/or wall panels, consisting of a package, wherein this package is at least composed of, on the one hand, one or more panels (2), which, at least on one pair of opposite panel edges (3-4-5-6), comprise coupling parts (7-8-9-10), or tiles of a stone-like material, whether or not comprising coupling parts, and, on the other hand, a packaging (11), consisting of one or more packaging parts (12-13-14-15), characterized in that the package comprises at least one crumple zone (16).

2.- Packaged set of panels according to claim 1, characterized in that the crumple zone (16) is provided at least along one of the panel edges (3-4-5-6) of said one or more panels (2).

3.- Packaged set of panels according to claim 1 or 2, characterized in that the crumple zone (16) forms part of at least one of said packaging parts (12-13-14-15).

4.- Packaged set of panels according to any of the preceding claims, characterized in that said crumple zone (16) substantially is constructed of a folded structure (19).

5.- Packaged set of panels according to claim 4, characterized in that said folded structure (19) defines one or more, whether or not open, hollow spaces (35).

6.- Packaged set of panels according to claim 4 or 5, characterized in that said folded structure (19) comprises at least a first wall (20) with a first surface extending along one of the edges of the set of panels, and that this wall comprises at least a wall part (23) which is folded, over a folding line (25), out of said surface towards the interior of the package.

7.- Packaged set of panels according to claim 6, characterized in that said folded structure (19) comprises at least a second wall (21) with a second surface which extends transverse to the first wall and in this manner forms an outer corner (22) of the package, wherein both walls (20-21) comprise wall parts (23-34) which are folded, over a folding line (25), out of the respective surfaces towards the
interior of the package and in this manner form an inner corner (26).

8.- Packaged set of panels according to claim 6 or 7, characterized in that said wall part (3) of the first wall (20) rests against one of the walls of the folded structure (19).

9.- Packaged set of panels according to any of the claims 6 to 8, characterized in that the respective wall part (23) is secured to the package by means of one or more glue connections (36).

10.- Packaged set of panels according to any of the preceding claims, characterized in that said crumple zone (16) forms part of a packaging part (12-13) which is realized as a cap (27) provided over an edge of the set of panels.

11.- Packaged set of panels, such as furniture, floor, ceiling and/or wall panels, consisting of a package, wherein this package is at least composed of one or more panels (2), which, at least on one pair of opposite panel edges (3-4-5-6), comprise coupling parts (7-8-9-10) and wherein a decorative side (40) of the panel (2) on at least one panel edge (3) extends up to the outermost edge part (41) of the panel (2) or alternatively up to a distance of less than 1 millimeter thereof; as well as of a packaging (11), consisting of one or more packaging parts (6), characterized in that the package comprises at least one protection zone (37) and this protection zone (37) is situated at least along the last-mentioned respective panel edge (3) of the set of panels.

12.- Packaged set of panels according to claim 11, characterized in that the protection zone (37) is constructed of one or more deformable packaging elements (38) and possibly one or more buffer spaces (39).

13.- Packaged set of panels according to claim 12, characterized in that said deformable packaging elements (38) are elastically deformable.

14.- Packaged set of panels, such as furniture, floor, ceiling and/or wall panels, consisting of a package, wherein this package is at least composed of one or more panels (2), which, at least on one pair of opposite panel edges (3-4, 5-6), comprise coupling parts (7-8-9-10); as well as of a packaging (11), characterized in that the
packaging (11) consists of at least two separate packaging parts (12-13-14-15) in the form of folded parts, which substantially extend along all edges (3-4, 5-6) of the set of panels.

15.- Packaged set of panels according to claim 14, characterized in that the packaging (5) is composed of at least four separate folded parts.

16.- Packaged set of panels according to any of the claims 14 to 15, characterized in that said different folded parts of the packaging (11) provide for a substantially open front side (18) and rear side (28) of the packaged set of panels (1).

17.- Packaged set of panels according to any of the claims 14 to 16, characterized in that the packaging, in the plane perpendicular to the stacking direction of the packaged set of panels (1), on the front and rear sides of each packaged set of panels (1) provides support surfaces (18, 28) on each edge (3-4-5-6) of the set of panels and wherein these support surfaces (18, 28), on the front side as well as on the rear side, respectively define the same or approximately the same plane.

18.- Packaged set of panels according to any of the claims 14 to 17, characterized in that for the packaging (11) substantially on each two opposite edges (3-4, 5-6) of the set of panels respectively two similar or preferably identical packaging parts (12-13-14-15) are applied.

19.- Packaged set of panels according to any of the preceding claims, characterized in that the packaging (11) substantially consists of folded cardboard.

20.- Packaged set of panels according to any of the preceding claims, characterized in that the packaging (11), apart from said packaging parts (12-13-14-15), comprises a film (29) which preferably is transparent or substantially transparent.

21.- Packaged set of panels, such as floor, ceiling and/or wall panels, consisting of a package, wherein this package is at least composed of two or more panels (2), which, at least on one pair of opposite panel edges (3-4, 5-6), comprise coupling
parts (7-8-9-10); as well as of a packaging (11), characterized in that the sum of the usable surface area of all panels (2) present in the package is one square meter, with a margin of less than 5 percent, and preferably less than 2 percent and best less than 1 percent, wherein this preferably relates to a positive margin.

22.- Packaged set of panels according to claim 21, characterized in that instead of the sum of the usable surface areas being one square meter, it is 10 square feet (or 0.92 square meters).

23.- Packaged set of moldings consisting of a package, wherein this package is at least composed of one or more moldings (44), which preferably comprise a pre-formed miter surface (51) on at least one extremity (45-46), and also consisting of a packaging (5), consisting of one or more packaging parts (12-13), characterized in that the package comprises at least one crumple zone (16).

24.- Packaged set of moldings according to claim 23, characterized in that said crumple zone (16) forms part of at least one of said packaging parts (12-13) and substantially is constructed of a folded structure (19) which defines one or more, whether or not open, hollow spaces (35).

25.- Packaged set of moldings according to claim 23 or 24, characterized in that said folded structure (19) comprises at least two walls (47-48) with respective surfaces which extend along the longitudinal direction of the set of moldings and that these walls (47-48) comprise wall parts (49-50), which are folded, over a folding line, out of the respective surfaces towards the interior of the package and in this manner form an inner corner (26).

26.- Packaged set of moldings according to any of the claims 23 to 25, characterized in that at least one of said wall parts (49-50) follows the shape of the pre-formed miter surface (51).

27.- Packaged set of moldings according to any of the claims 23 to 26, characterized in that said at least one of the wall parts (49-50) is secured to the package by means of one or more glue connections (36).

28.- Packaged set of moldings according to any of the claims 23 to 27,
characterized in that said crumple zone (16) forms part of a packaging part (12) which is realized as a cap (27) which is provided over said extremity (45) preferably comprising a pre-formed miter surface (51).