The invention relates to pavement material for traffic areas which consists of artificial stone material. Said pavement material is characterized by the following features: (a) first pavement elements are provided which have a single first shape or several different shapes; (b) second pavement elements of a single second shape or several different second shapes are provided in individual areas of the pavement material; (c) third pavement elements are provided which have a single third shape or several different third shapes; (d) the second pavement elements are at least mainly enclosed by several third pavement elements in such a manner that a transitional zone is formed to the subsequent pavement area of the first pavement elements; (e) the second shape or the second shapes is (are) different from the first shape or the first shapes, and the third shape or third shapes is (are) different both from the first shape or first shapes and the second shape or second shapes.
PAVEMENT FOR TRAFFIC AREA WITH PAVEMENT ELEMENTS MADE OF ARTIFICIAL STONE MATERIAL

[0001] This application is a continuation of PCT application number PCT/EP99/08874 filed on Nov. 18, 1999, which is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] The present invention relates to pavements and pavement elements.

SUMMARY OF THE INVENTION

[0003] According to one aspect of the invention, there is provided a pavement material for traffic areas, made from pavement elements of artificial stone material, with the following characteristics:

[0004] (a) first pavement elements are provided, with a single first shape or several different shapes;

[0005] (b) second pavement elements are provided, having a single second shape or with several different second shapes;

[0006] (c) third pavement elements are provided, having a single third shape or with several different third shapes;

[0007] (d) the second pavement elements are individually primarily surrounded by several third pavement elements such that a connection transition with the neighboring pavement region is constructed from first pavement elements;

[0008] (e) the second shape or second shapes are differentiated from the first shape or shapes, and the third or third shapes are differentiated both from the first shape or shapes, and from the second shape or shapes,

[0009] characterized in that,

[0010] (f) that second pavement elements are provided at individual locations in the pavement region where information is to be conveyed;

[0011] (g) and that second pavement elements are provided either with arrow shapes or with significant markings;

[0012] The object of the invention is a pavement material for traffic areas, constructed with pavement elements made from artificial stone material, with the following characteristics:

[0013] (a) first pavement elements are provided with a single first shape or with several differing first shapes;

[0014] (b) at individual locations of the pavement there are provided second pavement elements with a single second shape or with several differing second shapes;

[0015] (c) third pavement elements are provided, with a single third shape or with several differing third shapes;

[0016] (d) the second pavement elements are each to a large extent enclosed by several third pavement elements, in such a way that there is provided a connecting transition to the adjacent pavement region made of first pavement elements;

[0017] (e) the second shape or second shapes is (are) different from the first shape or from the first shapes, and the third shape or the third shapes is (are) different both from the first shape or the first shapes as well as from the second shape or second shapes.

[0018] Exterior pavements constructed with pavement elements of artificial stone material are known in a large number of pavement element shapes. Up to now, the pavement is made, as a rule, of like pavement elements or from different pavement elements alternating regularly. According to the pavement of the present invention, special second pavement elements are utilized, which on the basis of their shape, stand out from the uniformity of the pavement in the regions laid with first pavement elements. The invention opens up the possibility that special, prominent, second pavement elements can be provided at individual locations in the pavement, and can be incorporated in place in the pavement structure of the entire pavement in a non-disturbing way.

[0019] It is particularly preferred for the second pavement elements to be symbol pavement elements which, due to their second shape and/or by virtue of the symbols on their top surfaces (for example, letters, numbers/numerals, short words, more or less abstract symbols for human beings, logos or other symbols) convey some kind of message. In this case we are dealing with an inventive pavement for traffic areas which conveys message or information at individual locations. The optical differentiation of the symbol can preferably be provided by recessed or projecting surface regions (wherein the recessed regions or the regions left between raised regions can be filled preferably with color-contrast material, in particular on the basis of plastic or on the basis of a cemented mass, to the same height) or inlaid symbols of other material, preferably metal.

[0020] Preferably, the first pavement elements make up the major portion of the pavement.

[0021] In particular, areas regarded as traffic areas are those which are provided for vehicle traffic, bicycle traffic or pedestrian traffic, however not the areas provided for walking in private closed volumes. Particularly typical and preferred areas for use are: squares, courtyards, gateways, walkways, streets, pedestrian zones, loading zones, terraces, parking zones for vehicles, gas stations, industrially utilized surfaces, industrially traveled surfaces,workyards, container locations. Preferably, we are dealing with pavements "located out of doors" or the paving of outside areas, respectively.

[0022] The above mentioned artificial stone material is, in most cases, concrete. Brick-like materials can be mentioned as a further preferred possibility. Generally, any material can be used as well which contains additives or fillers that are mixed with binders (including plastic) which harden in a time-dependent manner. However, pavement elements, in particular a part of the overall total of pavement elements in a pavement, especially second pavement elements, can be partially or entirely of plastic.
It is especially preferred that the second shape of the second pavement elements be octagonal or arrow-like. There are, however, a great many other satisfactory second shapes, in particular (in plan view) round, rectangular including square, triangular.

Preferably, among the third pavement elements which at least to a large extent enclose a given second pavement element, at least one pair of third pavement elements are symmetrical with respect to one another. This leads to a particularly non-disturbing connection transition adjacent "normal" pavement region. Further there is a preferred possibility that a given second pavement element is at least to a large extent surrounded by four mutually identical, third pavement elements.

According to a further preferred development of the invention, the pavement for traffic areas is characterised in that a number of third pavement elements at least to a large extent enclose a given second pavement element, and by way of this number +1 of pavement elements a surface size A is covered; and that the surface size A corresponds to a number of neighbouring, laid, first pavement elements. In this manner, one attains the desired smooth connecting transition to the normal region of the pavement, and despite the conspicuous second pavement element there is only a small alteration in the number of the pavement elements.

Preferably at least some first pavement elements and/or at least some second pavement elements and/or at least some third pavement elements have spacing projections at the periphery. The spacing projections can in particular have a size adapted to produce small gaps with a width of 5 mm at the most between neighbouring laid pavement elements, which simplifies the laying of the pavement elements. These "small" gaps, which in most cases are 3.5 mm wide, are those gaps which normally are present as laying gaps between pavement elements in the pavement, and are normally filled with sand after the laying of the pavement elements. If the pavement elements have these "small" spacing projections, the worker has his work simplified by way of the contact with the spacing projections. On the other hand, the spacing projections can have in particular a size which results in wide gaps with a width of at least 8 mm between neighbouring laid pavement elements, such that efficient water drainage gaps are formed. If these "larger" spacing projections are provided, the result is relatively wide gaps between neighbouring laid pavement elements. These gaps are likewise normally filled with sand or with fine gravel.

Through these "wide gaps", rain water can be drained away more effectively than it can through the "small grooves of normal width" between the pavement elements, so that the laid surface no longer needs to be ducted to a waste-water facility, and a contribution to the desirable enrichment of the ground water is made possible. Utilising the "smaller" spacing projections or the "larger" spacing projections, it is possible either to proceed such that the projections of a given pavement element come into contact with locations on the neighbouring pavement element which are not provided with a projection, or one can proceed such that the projections come into contact with locations on the neighbouring laid pavement elements where the latter likewise have projections; in this case, therefore, the projections come into contact in pairs. It will be understood that, in this case, the projections have a "projecting dimension" with respect to the remaining pavement element contour, which corresponds to about half of the desired gap width; in the first case sketched above, the "projecting dimension" of the projection corresponds approximately to the desired gap width.

It is further preferred that at least some first pavement elements and/or at least some second pavement elements and/or at least some third pavement elements have locations where material is omitted, whereby efficient water drainage openings are provided in the pavement. For such efficient water drainage openings and the water removal capacity thus attained for the pavement, the previously expressed remarks regarding the water drainage gaps can be analogously applied.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention and further developments thereof will be described in greater detail below, with reference to example embodiments illustrated in the drawings.

FIG. 1 illustrates a top plan view of a segment of a pavement for traffic areas.

FIG. 2 illustrates a top plan view of a portion of FIG. 1, to a larger scale, to illustrate a second pavement element which is enclosed by a plurality of third pavement elements.

FIG. 3 illustrates a top plan view of a segment of a pavement showing a different embodiment.

FIG. 4 illustrates a top plan view of a portion of FIG. 3, shown to a larger scale, to illustrate a second pavement element which is enclosed by several third pavement elements.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The pavement for traffic areas 2, a segment of which is illustrated in FIG. 1, consists primarily of first pavement elements 4 which all, in top plan view, have the shape of a square. Oriented lengthwise of several lines through the pavement for traffic areas 2, referred to below as "pavement 2", the pavement 2 exhibits second pavement elements 5 which all have an arrow-like second shape, when seen in top plan view. Furthermore, third pavement elements 6 are provided, which, in groups of four, surround a second pavement element 5. Each pavement element arrangement 8 (as seen in FIG. 2), consisting of a single second pavement element 5 and four altogether surrounding third pavement elements 6, covers an altogether square surface size which corresponds to the surface size of four neighbouring, laid, first pavement elements 4. In FIG. 1 it is clearly seen that the second pavement elements 4 are very striking to the eye, but that, on the other hand, the structure of the pavement 2 and the gap configuration is only slightly disturbed. The third pavement elements 6 provide an optimal connection transition between the second pavement elements 5 and the first pavement elements 4 in the "normal region" of the pavement 2.

As can be clearly recognized in FIG. 2, the lower pair of third pavement elements 6 are symmetrical with respect to each other. The same applies to the upper pair of
third pavement elements 6, in FIG. 2. The axis of symmetry in both cases is the longitudinal midline through the enclosed second pavement element 5. The two lower third pavement elements in FIG. 2 are, generally speaking, L-shaped. The two upper third pavement elements 6 in FIG. 2 have the shape of a square with an obliquely cut-away corner.

[0036] It can be further recognized in FIG. 2 that the third pavement elements 6 are provided, on those pavement element sides which lie against a neighbouring third pavement element 6, with spacing projections 10. Each third pavement element 6 is provided with two spacing projections 10 which are so arranged that they constitute, with the spacer projections 10 of the two neighbouring third pavement elements 6, a spaced pair of spacing projections 10 per "paired pavement element side". The spacing projections have a "projecting dimension" with respect to the corresponding pavement element sides, of 2-4 mm. These spacing projections 10 serve to simplify the laying of the third pavement elements 6.

[0037] Additionally, analogous spacing projections 10 can be provided between the second pavement element 5 and the four third pavement elements 6. The same applies to the "pairs" of pavement element sides between the third pavement elements 6 and the adjacent first pavement elements 4, and also for the "pairs of pavement element sides" between neighbouring first elements 4.

[0038] Alternatively it is possible, instead of the illustrated and previously described "small" spacing projections 10 to provide "larger" spacing projections with a projecting dimension of, for example, 4-15 mm. At the "pairs of pavement element sides" where the "larger" spacing projections are provided, efficient water drainage openings are formed between neighbouring pavement elements.

[0039] For the sake of completeness it is pointed out that everywhere in the pavement 2 there are located small gaps 12 between neighbouring pavement elements, as clearly seen in FIG. 2. In view of that all such gaps should, strictly speaking, have been drawn as double lines. For reasons of clarity, the gaps 12 in FIG. 1 are shown only as a single line.

[0040] All pavement elements 4, 5, 6 consist of concrete; to that extent, reference can be made to concrete blocks for pavement. In practice, the pavement elements 4, 5, 6 normally exhibit a bevel between the top surface seen in FIGS. 1 and 2 and the side surfaces, thus a small 45° chamfer between the above mentioned surfaces. For the sake of clarity, the bevel is not illustrated.

[0041] The other example embodiment of a pavement 2, illustrated in FIG. 3 differs from the FIG. 1 embodiment of a pavement 2 in that the second pavement elements 5 each have the second shape of a regular octagon, and in that the third pavement elements 6 have, for all third pavement elements 6, the same third shape. Also with the second embodiment, there are again four third pavement elements 6 for the enclosure of a second pavement element 5.

[0042] Every second pavement element 5 has a second shape, which corresponds to the eight-cornered traffic signal "STOP AT THE MAJOR STREET". Additionally, the letter sequence STOP can be applied to every second pavement element 5.

[0043] From FIG. 4 it can be seen that, in accordance with the second embodiment, no spacing projections 10 are provided. Alternatively, however, "small" spacing projections 10 or also "large" spacing projections can be provided.

[0044] For both embodiments, all of the first pavement elements 4 had the same first shape of a square. As an alternative, it can be imagined that the first pavement elements 4 can alternate between "small squares" as illustrated and "large squares" which have quadruple the size; it is also conceivable to alternate between the illustrated small squares and longitudinally rectangular first pavement elements 4 having the size of two squares. Another possibility is to pave a first region of the pavement 4 with square first pavement elements 4, and a neighbouring further region of the pavement 2 with first pavement elements 4 of a different size or a different form.

[0045] In both embodiments, it will be noted that every second pavement element 5 has the same second shape. Alternatively it can be imagined that, in different regions of the pavement 2, second pavement elements 5 with differing second shape are used, for example in a first region the arrow-shaped second shape in accordance with FIGS. 1 and 2 and in another region of the pavement 2, the octagonal, second shape according to FIGS. 3 and 4.

[0046] With respect to the third pavement elements 6, FIGS. 1 and 2 show an example in which two differing third shapes are applied, while FIGS. 3 and 4 illustrate an example in which identical third shapes are used.

[0047] Further, in FIG. 4 there are dotted lines 14 which indicate in the third pavement element 6 how it is possible to provide, on the outer corners of the third pavement element 6, material omissions 16, which in top plan view are triangular. The analogous modification can be undertaken at all four corners of each first pavement element 4. Altogether than, there would be provided efficient water drainage openings in the pavement 2.

[0048] Further, the dotted lines in FIG. 4 indicate that it is possible to provide, as an alternative, smaller third pavement elements 6a. In this case, every second pavement element 5 is no longer completely enclosed by neighbouring third pavement elements 6a, but instead there are two sides of the octagon which remain free for connection to neighbouring first pavement elements 4. Every second pavement element 5, however, would still be to a large extent enclosed by third pavement elements 6a.

[0049] Finally, the possibility should be mentioned, both for FIG. 2 and FIG. 4, to unite the two third pavement elements 6 to the right of the second pavement element 5 to make one third pavement element. The same applies to the two third pavement elements 6 to the left of the second pavement element 5.

1. Pavement material for traffic areas, made from pavement elements of artificial stone material, with the following characteristics:
   (a) first pavement elements are provided, with a single first shape or several different shapes;
   (b) second pavement elements are provided, having a single second shape or with several different second shapes;
   (c) third pavement elements are provided, having a single third shape or with several different third shapes;
(d) the second pavement elements are individually primarily surrounded by several third pavement elements, such that a connection transition with the neighboring pavement region is constructed from first pavement elements;

(e) the second shape or second shapes are differentiated from the first shape or shapes, and the third or third shapes are differentiated both from the first shape or shapes, and from the second shape or shapes, characterized in that,

(f) that second pavement elements are provided at individual locations in the pavement region, where information is to be conveyed;

(g) and that second pavement elements are provided either with arrow shapes or with significant markings.

2. A pavement material for traffic areas according to claim 1, characterized in that, of the third pavement elements which at least largely enclose a given second pavement element, at least one pair of third pavement elements are symmetrical to one another, and/or second pavement elements are provided.

3. Pavement material for traffic areas according to claim 1, characterized in that, two third pavement elements or four third pavement elements at least largely enclose a given second pavement element.

4. Pavement material according to claim 1 characterized in that, a number, n, of third pavement elements at least largely enclose a given second pavement element, and, by way of this number, a surface area A is covered by n plus 1 pavement elements; and that the superficial area corresponds to a number n of neighboring, laid, first pavement elements.

5. Pavement material for traffic areas according to claim 1 characterized in that, at least some of the first pavement elements and/or at least some second pavement elements and/or at least some third pavement elements exhibit spacing projections on the periphery.

6. Pavement material for traffic areas according to claim 1 characterized in that, at least some first pavement elements and/or at least some second pavement elements and/or at least some third pavement elements have material-omission locations, so that in the pavement efficient water drainage openings are provided.

7. Pavement material for traffic areas comprising:
   at least one first pavement element,
   at least one second paving element,
   at least one third paving element; and

wherein said each of at least one second paving element is surrounded by said at least one third paving element, and at least one of said at least one third paving element abut said at least one first pavement element, and said at least one second paving element has a shape different from a shape of said at least one first pavement element, said at least one second paving element has a shape different from a shape of said at least one third pavement element, said at least one third paving element has a shape different from a shape of said at least one second pavement element.

8. The pavement material according to claim 7, wherein the shape of said at least one second pavement elements includes arrow shapes.

9. The pavement material according to claim 7, wherein said at least one second pavement elements includes visual marking.

10. The pavement material according to claim 7, wherein the shape of said at least one second pavement elements includes hexagonal shapes.

11. The pavement material according to claim 7, wherein an arrangement includes one second paving element is surrounded by four third paving elements, and the arrangement covers an amount of space equal to four first paving elements forming a square.

12. The pavement material according to claim 7, wherein said at least third paving elements includes at least two different shapes.

13. Pavement material for traffic areas, made from pavement elements of artificial stone material, with the following characteristics:
   first pavement elements are provided with a single first shape;
   second pavement elements are provided, said second pavement elements having at least one second shape;
   third pavement elements are provided, said third pavement elements having at least one third shape;
   the second pavement elements are individually primarily surrounded by several third pavement elements, such that a connection transition with the neighboring pavement region is constructed from first pavement elements;
   the second shape is differentiated from the first shape, and the third shape is differentiated both from the first shape and from the second shape,

wherein the second pavement elements are provided at individual locations in the pavement region such that information is to be conveyed.

14. A pavement material for traffic areas according to claim 13, wherein the third pavement elements which at least largely enclose a given second pavement element, at least one pair of third pavement elements are symmetrical to one another, and/or second pavement elements are provided.

15. Pavement material for traffic areas according to claim 13, wherein at least two third pavement elements at least largely enclose a given second pavement element.

16. Pavement material according to claim 13, wherein a number, n, of third pavement elements at least largely enclose a given second pavement element, and, by way of this number, a surface area A is covered by n plus 1 pavement elements; and that the superficial area corresponds to a number n of neighboring, laid, first pavement elements.

17. Pavement material for traffic areas according to claim 13, wherein at least one of at least some of the first pavement elements, at least some of the second pavement elements, and at least some of the third pavement elements exhibit spacing projections on the periphery.

18. Pavement material for traffic areas according to claim 13, wherein at least one of at least some of the first pavement elements, at least some of the second pavement elements, and at least some of the third pavement elements have material-omission locations, so that in the pavement efficient water drainage openings are provided.

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