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(54) **Horizontal of prefabricated traffic marking system providing an improved visibility on wet road surfaces, and method thereof**

(57) The present invention relates to a horizontal or prefabricated traffic marking system providing an improved visibility on wet road surfaces, said marking system comprising a signalling material supporting layer (2) having on the surface thereof a plurality of signalling material ridges (1) distributed in a random manner on said surface.

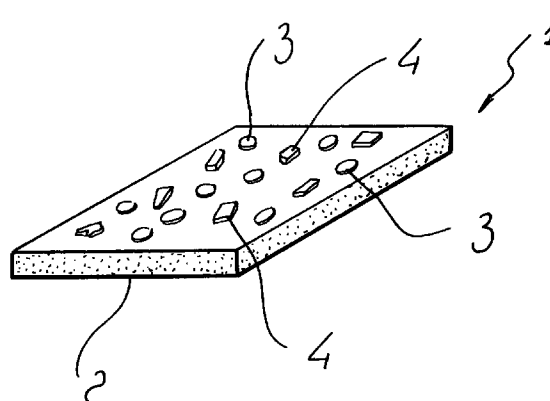


FIG. 1

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a horizontal or prefabricated traffic marking system providing an improved visibility on wet road surfaces, and a method therefor.

[0002] Horizontal traffic marking systems are very important, as is known, for delimiting traffic lanes, by providing optic guiding functions, in particular under poor visibility conditions.

[0003] A main problem of difficult solution is that of allowing a sufficient night visibility on wet roads, i.e. in the presence of a water film, since this water film produces, on prior marking systems, a mirror-like surface the effect of which is that of diffusing the impinging light of the vehicle headlamps thus, only a very small portion of the light rays returns to the eyes of the driver, thereby nullifying the marking system effect.

[0004] For solving the above mentioned problem, several solutions related to in-situ made systems have already been submitted, these prior solutions using, for example, small bars, balls, ridges of the same material forming the signalling strip, and some trials of using prefabricated marking strips, i.e. pre-made marking tapes applied by adhesive materials, have also been carried out.

[0005] In this latter case, projecting and engraved patterns with respect to a standard surface have been proposed, for example as shown in the document EP 93495, or microballs made of glass and having a comparatively large size have been embedded in the road surface, as shown in the Italian patent IT 216 810 in the name of the same Applicant.

[0006] Some of the above mentioned systems have provided partially satisfactory results, whereas other systems have been found to be much less satisfactory or partially satisfactory for a less time.

[0007] The above mentioned signally systems, however, have in common the disadvantages of very complex making methods as well as a very high making cost much greater than that of conventional like products.

SUMMARY OF THE INVENTION

[0008] Accordingly, the aim of the present invention is to overcome the above mentioned problem, by providing a horizontal or prefabricated traffic marking system, providing an improved visibility on wet road surfaces, which can be made by very simple making machining operations and very quick and efficient making methods.

[0009] Within the scope of the above mentioned aim, a main object of the present invention is to provide such a method for making a horizontal or prefabricated traffic marking system which can be carried out in a very easy manner, while allowing to easily nullify the deleterious

effect of the water film formed on the surfaces of the traffic marking system, thereby allowing said traffic marking system to be easily and efficiently seen.

[0010] Another object of the present invention is to provide a traffic marking system which, owing to its constructional features, is very reliable and safe in operation.

[0011] Yet another object of the present invention is to provide such a traffic marking system which can be easily made starting from easily available elements and materials and which, moreover, is very competitive from a mere economic standpoint.

[0012] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a horizontal or prefabricated traffic marking system providing an improved visibility on wet road surfaces, characterized in that said traffic marking system comprises a signalling material supporting layer having on a surface thereof a plurality of randomly distributed signalling material ridges.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following disclosure of a preferred, though not exclusive, embodiment of a horizontal or prefabricated traffic marking system according to the present invention, which is illustrated, by way of an indicative, but not limitative, example, in the figures of the accompanying drawings, where:

Figure 1 is a schematic perspective view illustrating a ridge or relief element:

Figure 2 is a cross-sectional view illustrating a ridge or relief element;

Figure 3 is a cross-sectional view illustrating a ridge or relief element provided with a coating;

Figure 4 illustrates the surface of a traffic marking system, according to the invention, with a plurality of related ridge or relief elements;

Figure 5 is a cross-sectional view illustrating a prefabricated marking strip, provided with a plurality of ridge or relief elements; and

Figure 6 illustrates a prefabricated marking strip provided with ridge elements which have been protectively coated.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] With reference to the number references of the above mentioned figures, the horizontal or prefabricated traffic marking system, providing an improved visibility of wet road surfaces, according to the present invention, comprises a plurality of ridge or relief elements, generally indicated by the reference number 1, comprising a sheet element 2, of any suitable signalling type, which is

provided with color, brightness, retroreflectivity and antiskid properties as required by the road traffic stands and which, advantageously, are made starting from glass microbeads 3 and hard particles 4.

[0015] Said ridge elements, in particular, are made with a thickness from 1 to 5 mm and are preferably obtained starting from a marking tape which is successively processed in order to provide the mentioned relief elements.

[0016] The layer 2 comprises several binding materials such as elastomeric, thermoplastic, vinyl chloride, polyurethane and the like materials, with pigments, mineral fillings and other components, as suitably studied for the intended application, so as to provide a layer having a sufficient hardness and resiliency to prevent said layer from being flattened in the time and under the pressure applied thereon by the motor vehicle traffic.

[0017] The ridge elements 1, as shown, in the cross-sections of Figure 3, may be provided with a resistant surface layer 5 comprising, for example, a polyurethane or epoxydic or acrylic base, containing therein glass roughening, microbeads.

[0018] Said ridge elements are practically made by a graining process performed on a basic marking material layer, by using, for example, all the waste materials deriving from other processing operations.

[0019] The above mentioned graining process can be performed in an opposite-blade cubing machine, or by any other suitable methods allowing to make particles with a top surface having a side within a very broad range, for example from 4 to 20 mm, preferably from 5 to 10 mm.

[0020] In this connection it should be pointed out that, in making the traffic marking system according to the invention, it will be possible to chose any desired geometric shapes for the particles, which can have, in a horizontal projection, any desired configurations such as a polygonal configuration or a circle, elliptical or the like configuration.

[0021] It should be moreover pointed out that the mentioned ridge elements are made of a material which is very similar to that forming prior prefabricated long-duration marking strips which, accordingly, can be advantageously used in the invention to be subjected by the mentioned graining processing.

[0022] Moreover, in order to provide self-evident economic advantages, processing scraps can be subjected to the cutting operation.

[0023] The thus made ridge elements are deposited on a supporting layer 10, made of any suitable marking material, in a random manner, by allowing said ridge elements to fall from a vibrating supplying device, or from a rotary metering device.

[0024] In the case of a traffic marking system applied to a road by using liquid materials, based on solvents or in a melt condition, the metering apparatus will be arranged immediately downstream of the apparatus making the marking strip by spraying or casting, so as to

embed the ridge elements in said strip before the chemical or physical setting of the latter.

[0025] Thus, the ridge elements will be permanently and firmly embedded in the signalling strip, thereby providing their effect through the overall wearable thickness thereof.

[0026] A further improvement of the intended properties can be, in some cases, obtained by applying on the traffic marking system thus made a liquid product or additives containing microbeads as well as roughening agents.

[0027] As prefabricated marking strips are applied, the method will be substantially the same, and the ridge elements will be applied either before or after the application of the end resin coating layer, said resin coating layer including, usually, a polyurethane, epoxydic or acrylic resin, and being provided for permanently holding the mentioned ridge elements therein, upon setting.

[0028] At the end of the method, the obtained product will appear as shown in Figure 5, from which it should be apparent that a polymeric material supporting layer 10 is provided, said polymeric material supporting layer 10 being optionally provided, on its surface, with a resin layer 11 thereinto are randomly introduced the mentioned ridge elements 1; moreover other optional components, such as a textile reinforcement 12 or a self-adhesive layer 13 can also be provided.

[0029] In order to further improve the surface effect, it would be possible to apply a further covering layer 15 on the top surface whereof, including said ridge elements, a further microbead and roughening and resin layer will be applied.

[0030] From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

[0031] In particular, a method for making a horizontal traffic marking system has been provided, which method can be easily carried out to provide optimum results, owing to its flexibility of application.

[0032] The invention, as disclosed, is susceptible to several modifications and variations, all of which will come within the scope of the invention.

[0033] Moreover, all of the details can be replaced by other technically equivalent elements.

[0034] In practicing the invention, the used materials, provided they are compatible to the intended application, as well as the contingent size and shapes, can be any, depending on requirements.

Claims

1. A horizontal or prefabricated traffic marking system providing an improved visibility on wet road surfaces, characterized in that said traffic marking system comprises a signalling material supporting layer having on a surface thereof a plurality of randomly distributed signalling material ridges.

2. A traffic marking system, according to the preceding Claim, characterized in that said ridge elements are made of a grained signalling material layer.
3. A traffic marking system, according to the preceding claims, characterized in that said ridge elements comprise polymers, pigments, glass microbeads and roughening materials. 5
4. A traffic marking systems, according to one or more of the preceding Claims, characterized in that said ridge elements have a thickness from 1 to 5 mm. 10
5. A traffic marking system, according to one or more of the preceding Claims, characterized in that said ridge elements have, as seen in plan, a substantially polygonal configuration, preferably a quadrangular configuration. 15
6. A traffic marking system, according to one or more of the preceding Claims, characterized in that said ridge elements have, as seen in plan, a size substantially from 4 to 20 mm, preferably from 5 to 10 mm. 20
7. A traffic marking system, according to one or more of the preceding Claims, characterized in that said ridge elements are made of a scrap marking material, deriving from the making of prefabricated strips. 25 30
8. A traffic marking system, according to one or more of the preceding Claims, characterized in that said system comprises a surface covering layer, in which said ridge elements are embedded. 35
9. A traffic marking system, according to one or more of the preceding Claims, characterized in that said covering layer comprises therein glass microbeads and roughening materials. 40
10. A method for making a horizontal or prefabricated traffic marking system, characterized in that said method comprises the steps of graining a signalling material layer including microballs and roughening materials, in order to provide a plurality of ridge elements, surface applying said ridge elements on a supporting layer applied by liquid phase spraying on a road or on a polymeric supporting layer for making prefabricated strips. 45 50
11. A method, according to the preceding Claim, characterized in that said method provides to apply a covering layer by using a resin of polyurethane, epoxydic or acrylic type, with glass microbeads and roughening materials, in order to improve the signalling effect and the time duration. 55
12. A method, according to one or more of the preceding Claims, characterized in that said ridge elements are randomly arranged so as to project from a water film formed because of rain or other events and to provide a required signalling effect.
13. A method, according to one or more of the preceding Claims, characterized in that said method comprises the step of using, for making said ridge elements, scrap marking material deriving from the making of prefabricated marking strips.

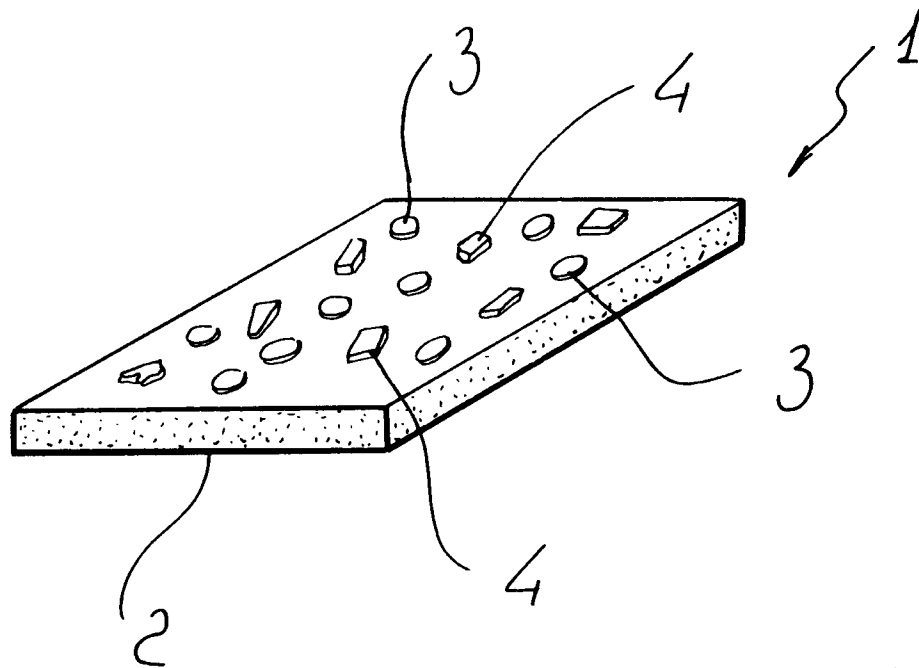
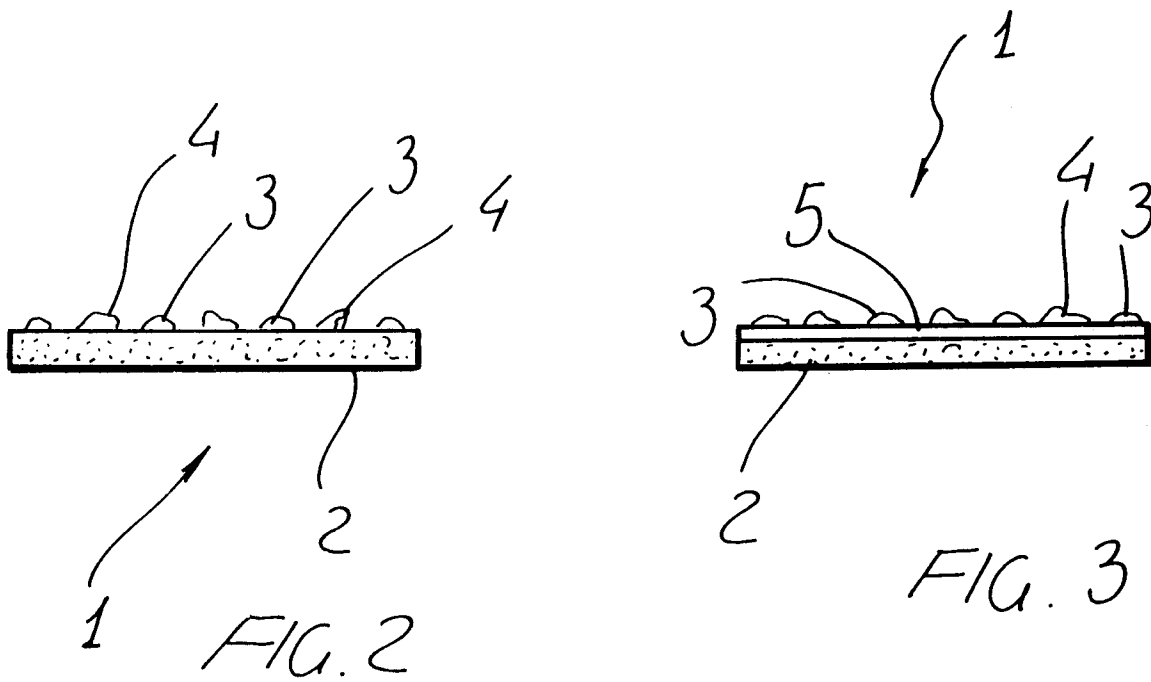


FIG. 1



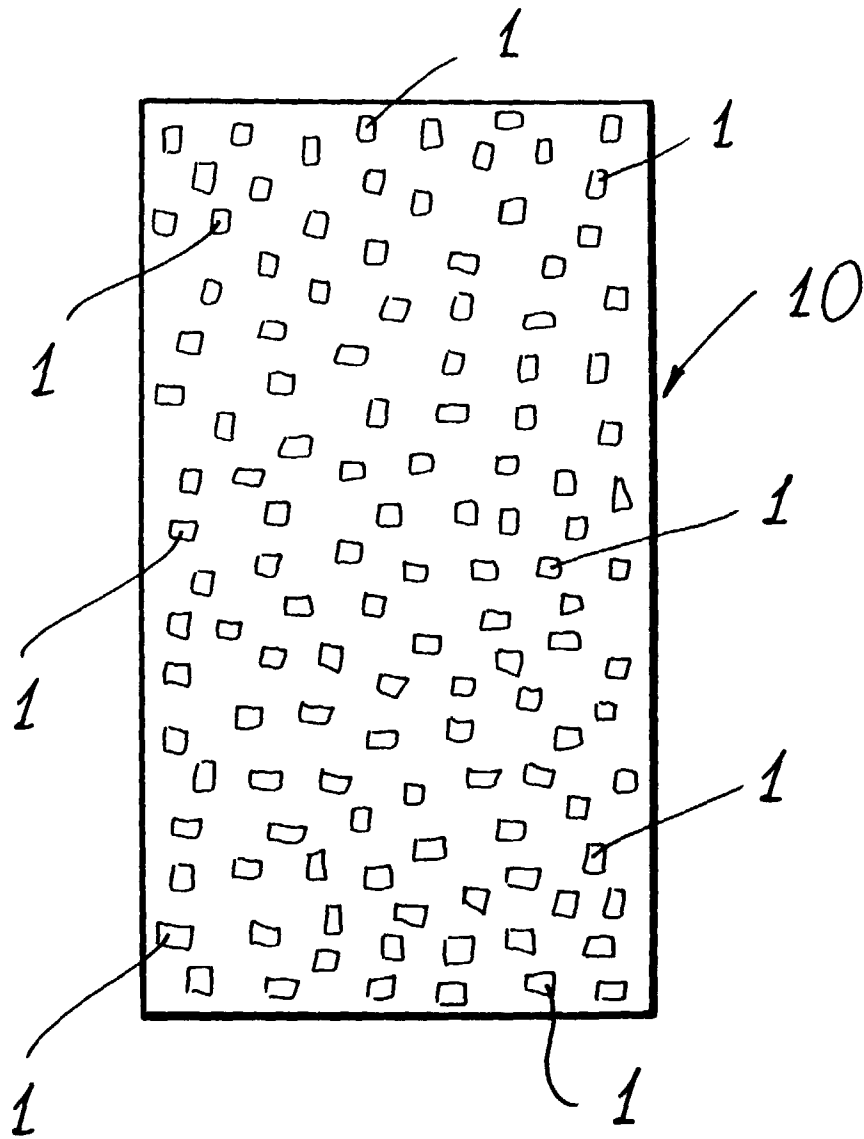


FIG. 4

