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(54) METHOD AND SPRAY VEHICLE FOR APPLYING A TWO-COMPONENT EPOXY ADHESIVE

(57) Spray vehicle for applying a two-component epoxy adhesive comprising one or more storage spaces and a heating device for these components, a mixing device for mixing the components and conduits to a spray body provided at the rear of the spray vehicle, wherein the spray body has a variable length.

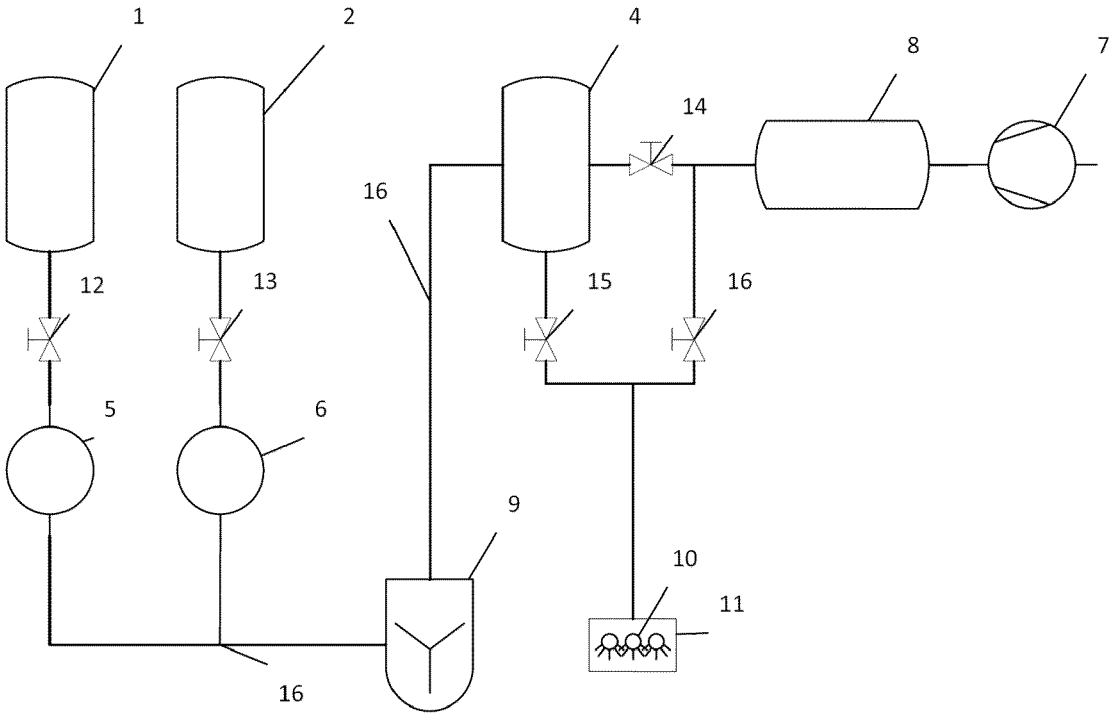

FIG. 1

EP 4 202 120 A1

Description

TECHNICAL FIELD

[0001] In a first aspect, the invention relates to a spray vehicle for applying a two-component epoxy adhesive.

[0002] In a second aspect, the invention also relates to a method for applying a two-component epoxy adhesive.

[0003] In a third aspect, the invention relates to the use of the spray vehicle according to the first aspect or the method according to the second aspect for applying a two-component epoxy adhesive.

PRIOR ART

[0004] To prevent slippage, a granulate can be applied to a road surface. When this is laid, the road surface is often provided with an epoxy layer comprising an epoxy adhesive. The epoxy adhesive is sprayed through several nozzles by means of a spray vehicle. This provides the road surface with a first layer of glue, which is then provided with a second layer of granulate. The granulate sinks into the epoxy adhesive. Once the epoxy adhesive has hardened, the excess granulate is removed. Herewith the underlying road surface has been improved by providing an epoxy layer.

[0005] CH712375 describes a control unit designed to adjust the total delivery rate and the mixing ratio between the liquid-like components over at least two output variables. A minimum of two output variables are performed, the total delivery rate and the mixing ratio can be adjusted and/or controlled simultaneously.

[0006] EP3881660 relates to an agricultural spreading device, in particular a pneumatic spreader, with a plurality of spreading elements mounted on a spreader bar and adapted to spread granular material on an agricultural plot. A detection device is arranged to detect rows of plants on the agricultural area, and a control device with which the direction from which the granulate is released can be adjusted.

[0007] US20160374328 discloses a sprayer having an inner boom section and an extendable outer boom section which is moved by a drive assembly including a pinch roller system.

[0008] EP 3469902 comprises a spray assembly for spraying a liquid with an extended position and a retracted position.

[0009] CN209393370 describes a kind of telescopic spray tube. It is a symmetrical and retractable installation on a mounting tube.

[0010] With such spray vehicles, only a single width can be covered with an epoxy adhesive. Another spray vehicle with a different width must be provided.

[0011] Many known devices are not very flexible in use and are used to process large fields. Changes in spray direction make it difficult to distribute evenly over the surface. For the application of adhesives to a road surface, fast but accurate spraying vehicles are required, suitable for spraying these adhesives over various widths.

[0012] The present invention aims to solve at least some of the above problems or drawbacks. The aim of the invention is to provide a method which eliminates those disadvantages.

SUMMARY OF THE INVENTION

[0013] In a first aspect, the present invention relates to a spray vehicle according to claim 1. The relevant spray vehicle has the advantage of applying an epoxy layer to a road surface wherein the spray body with the coupled nozzles can be set with a width at least equal to the width of the road surface. This allows the spray vehicle to be used on several roads, intended for the application of a two-component epoxy adhesive, without having to interrupt the application.

[0014] Preferred forms of the spray vehicle are shown in claims 2 to 7.

[0015] In a second aspect, the present invention relates to a method according to claim 8. This method has the advantage, among other things, of applying road markings on roads of different widths. By adjusting the spray body, it can be easily adjusted to the width of the road. In addition, the width can be adjusted during application if necessary, without stopping.

[0016] Preferred forms of the method are described in the dependent claims 9 to 14.

[0017] A specific preferred embodiment of the invention relates to a method according to claim 9. It is advantageous because the two-component epoxy adhesive can be applied just after mixing. This allows the two-component epoxy adhesive to flow best and level out on the road surface.

[0018] In a third aspect, the present invention relates to a use according to claim 15.

DESCRIPTION OF THE FIGURES

[0019] **Figure 1** shows a schematic representation of an embodiment of the present invention.

DETAILED DESCRIPTION

[0020] Unless otherwise defined, all terms used in the description of the invention, including technical and scientific terms, have the meaning as commonly understood by a person skilled in the art to which the invention pertains. For a better understanding of the description of the invention, the following terms are explained explicitly.
In this document, "a" and "the" refer to both the singular and the plural, unless the context presupposes otherwise. For example, "a segment" means one or more segments.

[0021] When the term "around" or "about" is used in this document with a measurable quantity, a parameter, a duration or moment, and the like, then variations are

meant of approx. 20% or less, preferably approx. 10% or less, more preferably approx. 5% or less, even more preferably approx. 1% or less, and even more preferably approx. 0.1% or less than and of the quoted value, insofar as such variations are applicable in the described invention. However, it must be understood that the value of a quantity used where the term "about" or "around" is used, is itself specifically disclosed.

[0022] The terms "comprise", "comprising", "consist of", "consisting of", "provided with", "include", "including", "contain", "containing", are synonyms and are inclusive or open terms that indicate the presence of what follows, and which do not exclude or prevent the presence of other components, characteristics, elements, members, steps, as known from or disclosed in the prior art.

[0023] Quoting numerical intervals by endpoints comprises all integers, fractions and/or real numbers between the endpoints, these endpoints included.

[0024] A "spray body" comprises a supporting system and various nozzles. A nozzle comprises a spout-shaped opening suitable for releasing epoxy adhesive. The length of the spray body is determined according to the axis passing through the nozzles. The axis running through the nozzles is perpendicular to the direction of travel of the spray vehicle. The width of the road and the length of the spray body are determined perpendicular to the direction of travel of the spray vehicle.

[0025] In a first aspect, the invention relates to a spray vehicle for applying a two-component epoxy adhesive.

[0026] When constructing cycle paths or in sharp bends, the road surface should not be too slippery. To prevent accidents due to slipping of vehicles, an epoxy layer with granulates is applied. The application of an epoxy layer with granulates is a solution to many of the problems described above.

[0027] For the application of two-component epoxy adhesive, it is desirable to apply it as fresh as possible, preferably just after mixing the component parts of the two-component epoxy adhesive. This results in a still fluid form of the two-component epoxy adhesive that can be applied to the road surface. After this, the liquid two-component epoxy adhesive can attach a granulate. According to a further embodiment, calcined bauxite is used as granulate, preferably with a grain size of 1-3 mm. This granulate is suitable for use on the road due to its sharper shape and has a hardness > 8 according to the Mohs scale. According to a further embodiment, quartz is used as granulate, preferably with a grain size of 1.6-2 mm. This granulate is suitable for cycle paths due to its round shape. According to an embodiment, a layer of granulate and/or epoxy adhesive of 1.5-2.5 kg/m^2 is applied to an asphalt surface, preferably 1.8-2.2 kg/m^2, more preferably about 2 kg/m^2. According to an embodiment, a layer of granulate and/or epoxy adhesive of 1.3-2.3 kg/m^2 is applied to a concrete substrate, preferably 1.6-2.0 kg/m^2, more preferably about 1.8 kg/m^2.

[0028] According to an embodiment, a layer of beads is applied to an epoxy adhesive. Preferably, the beads are glass beads with reflective properties which are suitable for being applied to a paint layer of a road marking, in order to make this road marking reflective. Preferably, these glass beads comprise reflective glass beads or ceramic elements consisting of ceramic beads fixed to a ceramic core with a refractive index intended to be between 2.4 and 1.9. The glass beads are preferably in accordance with the requirements and certification standards for glass beads for road markings (e.g. Approval and Certification Guidelines No. G0020 [in Dutch: goedkeurings- en certificatieleidraad nr. G0020]).

[0029] According to an embodiment, the spray vehicle comprises 6-10 nozzles coupled to the spray body, the nozzles being positioned equidistant from each other. Because the spray vehicle comprises 6-10 nozzles coupled to the spray body, the nozzles being positioned equidistant from each other, the nozzles can spray the road surface evenly over the desired width.

[0030] According to a further embodiment, each of the 6-10 nozzles can be individually switched off automatically. Because each of the 6-10 nozzles can be switched off individually automatically, the spray vehicle can easily spray a constant amount of epoxy adhesive per m^2. The spray vehicle adjusts the flow rate per nozzle depending on the surface to be sprayed. If the spray vehicle works with a width of 2-4.5 m, all nozzles can be open. If all nozzles were open at a width of less than 2 meters, the pressure in the pumps would become too great for the desired flow rate. However, good atomization must be done. This makes it desirable to switch off some nozzles by stopping the supply line. It is important to prevent the epoxy adhesive from solidifying and to seal it before mixing. If the desired sprayed width is 0.5 m, 2-3 nozzles will work. The desired sprayed width is the width of the road to be sprayed with epoxy adhesive.

[0031] An embodiment of the spray vehicle according to the first aspect of the invention comprises one or more storage spaces and a heating device for these components, a mixing device for mixing the components and conduits to a spray body provided at the rear of the spray vehicle, wherein the spray body has a variable length. The spray body is however very advantageous for the possibility of varying in length, so that a larger or smaller road can be covered. As a result, the same spray vehicle can be used in different situations and fewer spray vehicles need to be present on a site if a two-component epoxy adhesive has to be applied over different widths.

[0032] According to an embodiment of the spray vehicle of the present invention, the length of the spray body is variable between 0.5 m - 4.5 m, preferably the length is variable between 0.8 m - 3.5 m, more preferably the length is variable between 0.65 m - 4 m. The relevant ranges are ideal as it is possible to provide a road surface with a width twice the width of the spray vehicle with a two-component epoxy adhesive.

[0033] According to an embodiment, the length of the spray body is variable between 0.5 m - 4.5 m in steps of 0.1 - 10 cm. According to an embodiment, the length of

the spray body is variable in 10-100 different lengths between 0.5 m - 4.5 m.

[0034] According to an embodiment of a spray vehicle of the present invention, the spray body is mounted slidably at the rear of the spray vehicle. The spray body can thus be moved over the rear of the spray vehicle. This is very advantageous because it allows the spray vehicle to apply a two-component epoxy adhesive to any lane of a road surface, both forwards and in reverse. This means that the spray vehicle can be used for a large part of the road surfaces.

[0035] According to an embodiment of the spray vehicle of the present invention, further comprising a plurality of nozzles coupled to the spray body for spraying the epoxy adhesive.

[0036] According to a further embodiment, the spray body is a scissor arm, with a nozzle being coupled to each parallel coupling. In this case, the distance between two adjacent nozzles is proportionally increased or decreased with respect to the unfolding or folding of the scissor arm.

[0037] According to a preferred embodiment of a spray vehicle of the present invention, the nozzles coupled to the spray body are always equidistant from an adjacent nozzle. This allows the epoxy adhesive to be evenly distributed on the road surface to be covered. This ensures that the epoxy adhesive can flow best and level out the fastest over the road surface. This makes it possible to follow faster with a second layer or another layer with, for example, roughening agents such as granulates.

[0038] According to a preferred embodiment of a spray vehicle of the present invention, the spray body further comprises a motor for sliding the spray body over the rear of the spray vehicle. This is in fact very advantageous because use can be made here of a controller for automatically adjusting the position of the spray body. In addition, it can happen that the spray body is difficult to move due to dried epoxy adhesive between the movable parts. This allows the motor to overcome this force and enable the spray body to slide.

[0039] The shifting of the spray body can be done by means of a toothed gear connection. In addition to a toothed gear connection, a belt or chain connection can be used to move the spray body.

[0040] According to a further embodiment of a spray vehicle of the present invention, the spray body can be automatically folded open and closed by means of a motor. By folding and unfolding the scissor arm by means of a motor, the spray body can be adjusted to the desired width with much greater precision. In addition, it can happen that after a few times using the spray vehicle, some atomization ends up on the spray body, so that the folding and unfolding of the scissor arm happens less smoothly due to hardened epoxy adhesive. Here the motor can help to overcome the stiffness. According to another embodiment, the spray vehicle comprises a piston adapted to change the length of the spray body by means of air pressure.

[0041] According to a specific embodiment of a spray vehicle of the present invention, further comprising a compressor for supplying epoxy adhesive under a pressure of 0.2-3 bar to the nozzles. The compressor is able to provide a large pressure and is therefore advantageous compared to a pump. Because a compressor works with the venturi effect, fewer movable parts are used to move the epoxy adhesive compared to the use of a pump. It is namely easier and cheaper to replace a pipe than a pump.

[0042] Spraying has the advantage that the epoxy layer can be efficiently and evenly distributed on a road surface. In addition, the freshly mixed epoxy adhesive is still liquid. As a result, the liquid epoxy layer must be supplied to the nozzles under great pressure in order to enable atomization of the liquid epoxy layer. Enough pressure can be provided by means of the compressor to atomize the epoxy layer through the openings of the nozzles. By atomization is meant that at least 5 volume percent of the epoxy adhesive comes out of the nozzles with a droplet size of maximally 0.5 ml, preferably maximally 0.1 ml and more preferably maximally 0.05 ml.

[0043] According to an embodiment of a spray vehicle of the present invention, the spray vehicle further comprises a controller. The controller is suitable for controlling the pumps, heating elements, compressor and motor. The use of a controller to control the various components has the advantage of automating the spray vehicle for the most part. The controller ensures a correct dosage of the components to be mixed. The controller is also advantageous because all components are controlled where the user can start the processes without entering the storage space of the vehicle.

[0044] According to an embodiment of a spray vehicle of the present invention, further comprising a collection element slidably coupled below the spray body for collecting excess epoxy adhesive. The collection element can hereby be placed under the spray body and during use the collection element can be pushed aside so that the nozzles of the spray body have a view of the road surface. The collection element can be used during rinsing. When rinsing, a solvent will be used to clean the conduits. The piece of conduit between the nozzle and the meeting point of the two components must be thoroughly cleaned, after use.

[0045] A collection element has the advantage that it can be placed under the nozzles of the spray body after the road surface has been applied with an epoxy adhesive. This prevents possible dripping of residual epoxy adhesive in the conduits onto the road surface. The collection element has an additional advantage of protecting the spray body with the coupled nozzles against possible impacts or collisions, which can render the spray body inoperative.

[0046] According to an embodiment of a spray vehicle of the present invention, the heating element is configured to uniformly heat the contents of a storage medium. With large volumes of epoxy, it often happens that the

temperatures in the epoxy mass are not the same, which can result in more viscous parts being formed in the liquid epoxy mass. However, this would not be desirable for the use in the invention, because it could cause blockages and, in addition, could also impede atomization. It is therefore important to supply the mixed components, resulting in the two-component epoxy adhesive, in a preheated storage medium, whereby the epoxy adhesive remains evenly heated. As a result, the volume of epoxy adhesive has an equal temperature, which ensures an even curing after application. Heating the components makes them viscous enough to be pumped.

[0047] For the technical effects and advantages and/or preferred embodiments of the features of the spray vehicle according to the second aspect of the invention, reference is made to the above-described embodiments of the spray vehicle according to the first aspect of the invention in which corresponding features are described and which are also applicable to the method according to the second aspect of the invention.

[0048] In a second aspect, the invention relates to a method for applying a two-component epoxy adhesive. A method according to the second aspect of the present invention comprising: providing a two-component epoxy adhesive, heating the two components, mixing the two components into an epoxy adhesive, activating the compressor wherein the epoxy adhesive is supplied under high pressure to a spray body, wherein the spray body is positioned and unfolded over the surface to be sprayed.

[0049] It is namely very advantageous because with a single spray vehicle you can treat more different dimensions of road surfaces. This makes it possible to use the spray vehicle for more tasks and it is not necessary to provide a different spray vehicle for different types of road surfaces. This saves and ensures a more flexible use of the spray vehicle.

[0050] According to a preferred embodiment of the present invention in a method according to the second aspect, the two components are provided in storage media. Subsequently, the two components are mixed by means of a mixing device. The components can be loaded into the storage media to prepare the works. Before the start of the application of a new road surface, the two components can be mixed to provide a stock of epoxy adhesive. This allows the epoxy adhesive to be applied directly to the road surface upon arrival at the site. During the execution of the works, the components can be mixed on site during pumping in the conduits.

[0051] According to a further embodiment of the present invention in a method according to the second aspect, the components are loaded into the respective storage mediums using pumps. This is namely very advantageous because the pumps simplify the supply of the storage mediums, but in addition, the components can easily be supplied during the application of the epoxy adhesive. As a result, operations can be continued for longer and the applied epoxy adhesive can be seen as a continuous line without overlapping.

[0052] Depending on the epoxy used for the application of the road surface, the components to be mixed may differ. However, it is possible to empty the storage media in addition to filling the storage media with the desired components by using pumps. If it is necessary to change components, those storage media can be emptied using the pumps, followed by loading the storage media with the correct and new components.

[0053] According to an embodiment of the present invention in a method according to the second aspect, the components are preheated before mixing, where the components and the mixed epoxy adhesive are then kept at a constant temperature. Heating keeps one or both components liquid and ensures better mixing. After mixing the components into an epoxy adhesive, this starts the curing process, and the heat ensures that the curing process goes faster.

[0054] It is furthermore advantageous to provide the epoxy adhesive in the storage medium with a constant temperature over the entire volume of the relevant storage medium. This is because this means that the curing of the epoxy adhesive is equal over the entire volume. As a result, no places are provided where the epoxy adhesive cures at a different speed, which can result in the formation of hard parts, which can lead to clogging.

[0055] In a next step, the liquid epoxy adhesive can be applied to the road surface. The liquid epoxy adhesive is hereby supplied to the spray elements, with which the epoxy adhesive is applied to the road surface.

[0056] According to an embodiment of the present invention in a method according to the second aspect, the speed of the spray vehicle can be adjusted depending on the length of the spray body. By adjusting the speed of the vehicle, the uniform distribution of the epoxy adhesive on the road surface can be ensured. In addition, this can also ensure the predetermined thickness of the epoxy adhesive for all possible lengths of the spray body.

[0057] According to a preferred embodiment of the present invention in a method according to the second aspect, the epoxy adhesive is sprayed onto the intended surface. The epoxy adhesive is supplied to the nozzles under great pressure by means of a compressor. The use of a compressor limits the number of movable parts in the transport of the epoxy layer to the nozzles. The use of a pump could cause jamming due to the curing of the epoxy layer over time in the pump, a problem that does not arise, however, when using the pressure created by the compressor. Spraying is also advantageous because spraying can be used to apply an evenly distributed uniform layer of epoxy adhesive that nicely and easily levels out to a flat epoxy adhesive layer.

[0058] Furthermore, a layer of roughening agents is sprinkled over the epoxy adhesive, which eventually get stuck in the relevant epoxy layer after curing of the epoxy layer. The epoxy adhesive is herein completely poured over with the roughening agents so that the epoxy layer is no longer visible, the roughening agents can be applied a second time if necessary.

[0059] Once the epoxy layer with the roughening agents has hardened, this new road surface is ready for use. The new road surface has several advantages. The epoxy layer with roughening agents has the advantage that an anti-slip layer is formed because the roughness (SRT value) increases. Measured according to ASTM E2340/E2340M-11, the SRT value increases from about 45 to at least 55, preferably to 80-90, after application of the epoxy adhesive with roughening agents. In addition, the relevant epoxy layer prevents water from splashing up, which is very beneficial for cyclists

[0060] According to an embodiment, a granulate is applied to the still liquid two-component epoxy adhesive. According to an embodiment, an excess of granulate is applied to the still liquid two-component epoxy adhesive. According to a further embodiment, the granulate comprises calcined bauxite with a grain size of 1-3 mm. According to an embodiment, the method comprises a step whereby the excess of granulate, which has not stuck in the epoxy layer, is sucked up.

[0061] In a third aspect, the invention relates to the use of the spray vehicle according to the first aspect or the method according to the second aspect.

[0062] In what follows, the invention is described by way of non-limiting figures illustrating the invention, and which are not intended to and should not be interpreted as limiting the scope of the invention.

DESCRIPTION OF THE FIGURES

[0063] The invention will now be further elucidated with reference to the following figures, without otherwise being limited thereto.

Figure 1 concerns a spray vehicle for applying an epoxy layer. The spray vehicle has three storage spaces (1, 2, 4) and a heating device for these storage spaces (1, 2, 4), a mixing device (9) for mixing the components and conduits (16) to a spray body (11) provided at the back of the spray vehicle. The spray body (11) provided at the rear of the spray vehicle has a variable length.

[0064] The spray body (11) has the option of being shifted over the rear of the spray vehicle. In addition to shifting the spray body (11), it is possible to extend or shorten the spray body (11).

[0065] Furthermore, the spray body (11) is provided with several nozzles (10). The nozzles (10) are hereby coupled to the spray body (11) wherein the nozzle openings are directed towards the road surface. The nozzles (10) extend along with the spray body (11). The distance between adjacent nozzles (10) is at all times equal to the distance between two other adjacent nozzles (10). The distance between the two adjacent nozzles (10) thus varies proportionally with the variable length of the spray body (11).

[0066] The spray vehicle also has a compressor (7) with a compressed air tank (8), the compressor being able to supply the epoxy adhesive under high pressure through conduits (16) to the nozzles (10) of the spray body (11). Due to the high pressure supplied by the compressor (7), the epoxy adhesive can be sprayed over the road surface. By means of operating elements (15, 16, 17) it is possible to connect or disconnect the compressor from the storage medium (4) and the nozzles (10).

[0067] Furthermore, the spray vehicle has a collection element (not shown in the figure) slidably coupled below the spray body (11) for collecting excess epoxy adhesive. This allows drops of epoxy adhesive to be collected without them ending up on the road surface.

[0068] The storage spaces (1, 2) can be filled or emptied with the necessary components of a particular epoxy adhesive by means of two pumps (5, 6), which are coupled under the spray vehicle. The pumps (5, 6) have the option of being connected to external storage spaces via hoses.

[0069] Furthermore, the storage spaces (1, 2, 4) are each provided with a heating element, which can heat the contents of the storage space (1, 2, 4) evenly. This namely has the advantage that the epoxy adhesive cures evenly throughout its entire volume. This prevents clots, which can cause blockages. The storage spaces for the two components of the epoxy adhesive (1,2) are heated to reduce the viscosity. The storage space for the solvent to rinse the conduits after use is only heated if the ambient temperature drops below freezing point.

[0070] The spray vehicle also has a controller that ensures a correct ratio during mixing of the components to obtain a. In addition, the controller ensures that the components and the mixed hot and liquid epoxy adhesive are moved to their correct destinations in a fully automatic manner.

[0071] The various storage spaces (1, 2, 4) are connected to the respective pumps (5, 6) and mixing element (9) by means of a conduit system (16). The mixing element (9) is in turn coupled to the nozzles (10) provided on the spray body (11). By means of operating elements (12, 13) the storage mediums (1, 2) can be connected or disconnected from the spray vehicle.

EXAMPLES

Example 1:

[0072] Example 1 concerns the construction of a strip of road surface with an epoxy layer.

[0073] The road surface must first of all be completely free of impurities, grease or moisture. The road surface to be treated is cleaned by means of a brush truck.

[0074] Then the two components are heated and mixed to a liquid epoxy adhesive. The epoxy adhesive is then stored in a storage medium where it is further heated and/or the heat is kept constant. The hot epoxy adhesive is now ready for further use.

[0075] The hot liquid epoxy adhesive is sprayed onto the road surface as a first layer, followed by a layer of roughening agents. Whereby the roughening agents are glued in the liquid epoxy adhesive. Shortly after the com-

ponents have been mixed to form the hot and liquid epoxy adhesive, the chemical reaction between the components takes place that initiates the curing process that causes the liquid epoxy adhesive to harden. The relevant hot and liquid epoxy adhesive must be quickly applied to the road surface. Once the hot and liquid epoxy adhesive has been applied to the road surface, it begins to cool down, slowing down the drying process. Furthermore, the roughening agents are applied to the liquid epoxy adhesive at least over the entire surface of the liquid epoxy adhesive layer.

[0076] After the roughening agents have been applied, they are additionally pressed into the still liquid epoxy adhesive layer to guarantee a good embedding. The excess of roughening agents is finally removed by means of a suction system that sucks up the excess of roughening agents that have not adhered to the epoxy layer. The excess can be reused in later projects, so that as little as possible in consumables is lost.

[0077] The cured epoxy adhesive with the embedded roughening agents offers better resistance to the vehicle that uses the road surface. Furthermore, the epoxy adhesive prevents splashing water, which is especially beneficial for bicycle users. Another additional advantage is the wear resistance and the hardness of the epoxy adhesive, so that the epoxy adhesive in a liquid state can fill the cracks in the underlying road surface and repair it after curing. In addition, this, in combination with the water resistance, ensures protection of the underlying road surface. It is not possible for water to enter the opening in the road surface, which prevents further cracking of the road surface.

Claims

1. Spray vehicle for applying a two-component epoxy adhesive comprising one or more storage spaces and a heating device for these components, a mixing device for mixing the components and conduits to a spray body provided at the rear of the spray vehicle, **characterized in, that** the spray body has a variable length, wherein the spray vehicle comprises 6-10 nozzles coupled to the spray body, wherein the nozzles are positioned equidistant from each other and further **characterized in that** each of the 6-10 nozzles can be individually switched off automatically.

2. Spray vehicle according to claim 1, **characterized in, that** the length of the spray body is variable between 0.5 m - 4.5 m, preferably the length is variable between 0.8 m - 3.5 m, more preferably the length is variable between 0.65 m - 4 m.

3. Spray vehicle according to claim 1 or 2, **characterized in, that** the spray body is slidably mounted on the rear side of the spray vehicle.

4. Spray vehicle according to any of the preceding claims 1-3, further comprising a plurality of nozzles coupled to the spray body for spraying the epoxy adhesive.

5. Spray vehicle according to any of the preceding claims 1-4, further comprising a compressor for supplying the epoxy adhesive under a pressure of 0.2-3 bar to the nozzles.

6. Spray vehicle according to any of the preceding claims 1-5, further comprising a collection element slidably coupled below the spray body for collecting excess epoxy adhesive.

7. Spray vehicle according to any of the preceding claims 1-6, **characterized in, that** the heating element is configured to uniformly heat up the content of a storage medium.

8. Method for applying a two-component epoxy adhesive, comprising: providing a two-component epoxy adhesive, heating the two components, mixing the two components into an epoxy adhesive, activating the compressor wherein the epoxy adhesive is supplied under a pressure of 0.2-3 bar to a spray body with 6-10 nozzles, **characterized in, that** the nozzles are positioned equidistant from each other and further **characterized in, that** each of the 6-10 nozzles can be individually switched off automatically.

9. Method according to claim 8, **characterized in, that** the two components are provided in storage mediums wherein the two components are then mixed by means of a mixing device.

10. Method according to claims 8 or 9, **characterized in that**, the components are preheated before mixing, where the components and the mixed epoxy adhesive are then kept at a constant temperature.

11. Method according to claims 8, 9 or 10, **characterized in, that** the speed of the spray vehicle can be adjusted depending on the length of the spray body.

12. Method according to any of the preceding claims 8-11, **characterized in, that** the epoxy adhesive is sprayed onto the intended surface.

13. Method according to any of the preceding claims 8-12, **characterized in, that** a granulate is applied to the still liquid two-component epoxy adhesive.

14. Method according to claim 13, **characterized in that**, the granulate comprises calcined bauxite with a grain size of 1-3 mm.

15. Use of the spray vehicle according to any of claims

1-7 or the method according to any of claims 8-12 for applying a two-component epoxy adhesive.

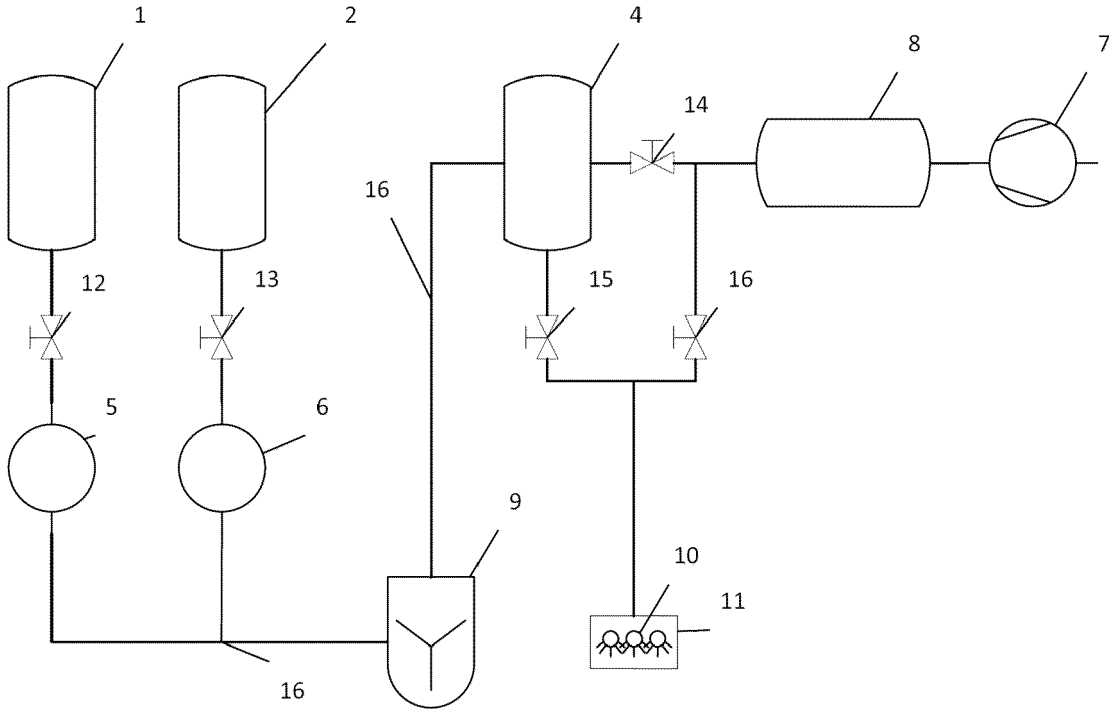

FIG. 1

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 22 21 6715

DOCUMENTS CONSIDERED TO BE RELEVANT

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Place of search	Date of completion of the search	Examiner
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