mixed into the resin composition during mixing.

[0006] However, in case of using the paint shaker, there is a problem in that it takes a long time to mix the resin composition.

[0007] Patent document 1: JP 2003-105094A

SUMMARY OF THE INVENTION

[0008] It is an object of the present invention to provide an agitating and mixing device and a method for producing a semiconductor sealing resin composition, which are capable of preventing metallic foreign substances from being mixed into a resin composition and reducing a mixing time for mixing the resin composition.

[0009] In order to achieve the object, one aspect of the present invention is directed to an agitating and mixing device for mixing a composition containing plural kinds of pulverized materials, each of the pulverized materials having a different specific gravity, the agitating and mixing device comprising:

a container for storing the composition;

an agitating member for agitating the composition, the agitating member inserted in the container; and

a driving device for vibrating the container,

wherein the agitating and mixing device is configured to agitate the composition stored in the container using the agitating member and then to mix the composition by vibrating the container using the driving device.

[0010] In the agitating and mixing device of the present invention, it is preferred that the agitating and mixing device comprises two or more of the agitating member. In the agitating and mixing device of the present invention, it is preferred that the container has a bottom surface and each of the agitating members has a plate-like portion having a same shape as a shape of a piece which could be obtained by dividing a plate-like member having the same shape and size as the bottom surface of the container into plural pieces.

[0011] In the agitating and mixing device of the present invention, it is preferred that the agitating member has a plate-like portion.

[0012] In the agitating and mixing device of the present invention, it is preferred that the agitating member is

configured to agitate the composition by spacing the plate-like portion apart from the bottom surface of the container.

[0013] In the agitating and mixing device of the present invention, it is preferred that each of the agitating members has a rod-like portion having one end portion and another end portion, and the plate-shape portion of each of the agitating members is provided on the one end portion of the rod-like portion of each of the agitating members.

[0014] In the agitating and mixing device of the present invention, it is preferred that the plate-shape portion of each of the agitating members is perpendicular to the rod-like portion of each of the agitating members.

[0015] In the agitating and mixing device of the present invention, it is preferred that the driving device is configured to simultaneously vibrate the container in at least two directions.

[0016] In the agitating and mixing device of the present invention, it is preferred that at least an inner surface of the container is constituted of a nonmetallic material.

[0017] In the agitating and mixing device of the present invention, it is preferred that at least an outer surface of the agitating member is constituted of a nonmetallic material.

[0018] In the agitating and mixing device of the present invention, it is preferred that the composition contains a resin particle and an inorganic particle as the plural kinds of pulverized materials.

[0019] In the agitating and mixing device of the present invention, it is preferred that the composition is stored in the container in a state that the composition is separated into a first layer containing a resin particle and a second layer containing an inorganic particle.

[0020] In order to achieve the object, another aspect of the present invention is directed to a method for producing a semiconductor sealing resin composition, the method comprising:

agitating a composition stored in a container using an agitating member, the composition containing plural kinds of pulverized materials and each of the pulverized materials having a different specific gravity; and

mixing the composition by vibrating the container.

[0021] In the method of the present invention, it is preferred that the container has a bottom surface, the agitating member has a plate-like portion and the agitating member is configured to agitate the composition by spacing the plate-like portion apart from the bottom surface of the container.

[0022] In the method of the present invention, it is preferred that the container is simultaneously vibrated in at least two directions.

[0023] In the method of the present invention, it is preferred that the composition is stored in the container in a state that the composition is separated into a first layer containing a resin particle and a second layer containing an inorganic particle.

[0024] In the method of the present invention, it is preferred that the composition is uniformly mixed.

[0025] In the method of the present invention, it is preferred that when six samples of the composition are respectively picked out from six different points of the composition after mixing, each of the samples having a weight of 3 g, and then each of the samples is burned to an ash, a standard deviation of weight fraction among the ashes is less than 0.2.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] Fig. 1 is a view showing a producing process of a resin composition.

Fig. 2 is a side view (partial cross section view) showing an agitating and mixing device according to one embodiment of the present invention.

Fig. 3 is a perspective view showing the agitating and mixing device shown in Fig. 1.

Fig. 4 is a perspective view showing an agitating member of the agitating and mixing device shown in Fig. 1.

Fig. 5 is a plan view showing a state that the agitating members are inserted in a container of the agitating and mixing device.

mixed into the resin composition during mixing.

[0006] However, in case of using the paint shaker, there is a problem in that it takes a long time to mix the resin composition.

[0007] Patent document 1: JP 2003-105094A

SUMMARY OF THE INVENTION

[0008] It is an object of the present invention to provide an agitating and mixing device and a method for producing a semiconductor sealing resin composition, which are capable of preventing metallic foreign substances from being mixed into a resin composition and reducing a mixing time for mixing the resin composition.

[0009] The above object is achieved by the following present inventions (1) to (17).

(1) An agitating and mixing device for mixing a composition containing plural kinds of pulverized materials, each of the pulverized materials having a different specific gravity, the agitating and mixing device comprising:

a container for storing the composition;

an agitating member for agitating the composition, the agitating member inserted in the container; and

a driving device for vibrating the container,

wherein the agitating and mixing device is configured to agitate the composition stored in the container using the agitating member and then to mix the composition by vibrating the container using the driving device.

[0010](2) The agitating and mixing device according to the above (1), wherein the agitating and mixing device comprises two or more of the agitating member.

[0011](3) The agitating and mixing device according to the above (2), wherein the container has a bottom surface and each of the agitating members has a plate-like portion having a same shape as a shape of a piece which could be obtained by dividing a plate-like member having the same shape and size as the bottom surface of the container into plural pieces.

[0012](4) The agitating and mixing device according to the above (1) or (2), wherein the agitating member has a plate-like portion.

[0013](5) The agitating and mixing device according to the above (3)

or (4), wherein the agitating member is configured to agitate the composition by spacing the plate-like portion apart from the bottom surface of the container.

[0014](6) The agitating and mixing device according to any one of the above (3) to (5), wherein each of the agitating members has a rod-like portion having one end portion and another end portion, and the plate-shape portion of each of the agitating members is provided on the one end portion of the rod-like portion of each of the agitating members.

[0015](7) The agitating and mixing device according to the above (6), wherein the plate-shape portion of each of the agitating members is perpendicular to the rod-like portion of each of the agitating members.

[0016](8) The agitating and mixing device according to any one of the above (1) to (7), wherein the driving device is configured to simultaneously vibrate the container in at least two directions.

[0017](9) The agitating and mixing device according to any one of the above (1) to (8), wherein at least an inner surface of the container is constituted of a nonmetallic material.

[0018](10)The agitating and mixing device according to any one of the above (1) to (9), wherein at least an outer surface of the agitating member is constituted of a nonmetallic material.

[0019](11)The agitating and mixing device according to any one of the above (1) to (10), wherein the composition contains a resin particle and an inorganic particle as the plural kinds of pulverized materials.

[0020](12) The agitating and mixing device according to any one of the above (1) to (11), wherein the composition is stored in the container in a state that the composition is separated into a first layer containing a resin particle and a second layer containing an inorganic particle.

[0021](13) A method for producing a semiconductor sealing resin composition, the method comprising:

agitating a composition stored in a container using an agitating member, the composition containing plural kinds of pulverized materials and each of the pulverized materials having a different specific gravity; and

mixing the composition by vibrating the container,

wherein the agitating member has a plate-like portion, and

the agitating member is configured to agitate the composition by spacing the plate-like portion apart from a bottom surface of the container.

[0022] (14) The method according to the above (13), wherein the container is simultaneously vibrated in at least two directions.

[0023] (15) The method according to the above (13) or (14), wherein the composition is stored in the container in a state that the composition is separated into a first layer containing a resin particle and a second layer containing an inorganic particle.

[0024] (16) The method according to any one of the above (13) to (15), wherein the composition is uniformly mixed.

[0025] (17) The method according to the above (16), wherein when six samples of the composition are respectively picked out from six different points of the composition after mixing, each of the samples having a weight of 3 g, and then each of the samples is burned to an ash, a standard deviation of weight fraction among the ashes is less than 0.2.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] Fig. 1 is a view showing a producing process of a resin composition.

Fig. 2 is a side view (partial cross section view) showing an agitating and mixing device according to one embodiment of the present invention.

Fig. 3 is a perspective view showing the agitating and mixing device shown in Fig. 1.

Fig. 4 is a perspective view showing an agitating member of the agitating and mixing device shown in Fig. 1.

Fig. 5 is a plan view showing a state that the agitating members are inserted in a container of the agitating and mixing device.