CLAIMS

1) Method of gravimetric filling of a solid product in a container (1) comprising the following steps:

a) providing a container (1) comprising a generally cylindrical body (2) and which is equipped in its upper part with a ridge (3) of diameter slightly greater than the diameter of the body (2) of the container (1),

b) inserting the container (1) in a hollow cylinder (4), the inner cavity (5) of which has a diameter slightly greater than the diameter of the body (2) of the container (1), and which is equipped with a recess (6) in the upper area of the inner cavity (5), so that the ridge (3) of the container (1) rests in the recess (6) of the upper area of the inner cavity (5) of the cylinder, and with the contact area between the ridge (3) of the container (1) and the recess (6) of the upper area of the inner cavity (5) of the cylinder (4) the only area of contact between container (1) and cylinder (4), so that the container (1) is in suspension within the inner cavity (5) of the cylinder (4) and with its upper surface (7) located slightly underneath the upper surface (8) of the cylinder;

c) disposing the cylinder (4) and container (1) unit above a weighing cell (9) which is equipped, on its weighing surface (10), with a projection (11) which has a diameter less than the diameter of the inner cavity (5) of the cylinder (4) and a suitable height to raise the container (1) by the sufficient height (h) so that the ridge (3) of the container is no longer in contact with the recess (6) of the upper area of the inner cavity (5) of the cylinder (4) but without the upper surface (7) of the container (1) exceeding the height of the upper surface (8) of the cylinder (4), so that the container (1) is completely suspended above the projection (11) provided on the surface (10) of the weighing cell (9) and therefore resting all its weight thereon;

d) covering the upper surface (8) of the cylinder (4) hermetically by means of a lid (12) equipped with an orifice (13) wherethrough it is possible to add the solid product by means of a dosing element or nozzle (14);

e) weighing with the desired precision the container (1) whilst it is suspended above the projection (11) provided on the surface (10) of the weighing cell (9) and resting all its weight thereon, and

f) filling the container (1) with the solid product through the orifice (13) of the lid (12), gravimetrically controlling the quantity of product added thereto by means of the weighing cell (9).

2) Method according to claim 1, wherein between container (1) and cylinder (4) is provided at least one sleeve covering the container (1) designed to guarantee the verticality and suspension of the container (1) within the inner cavity (5) of the cylinder (4) so that neither the container (1) nor its covering sleeve touch the inner walls of the cylinder (4).

3) Method according to claims 1 or 2, wherein stages c) to f) are repeated the necessary times in the case that more than one solid product is to be dosed in the container (1).

4) Method according to any of claims 1 to 3, wherein previously, subsequently or simultaneously to any of stages a) to f) an ionization stage of the container (1) and/or of the cylinder (4) is introduced to neutralize its electrostatic charges.

5) Method according to claim 4, wherein the ionization stage is carried out by introducing an ionizing bar, needle or ring in the container (1) and/or in the cylinder (4).

6) Method according to claims 4 or 5, wherein a stream of compressed air or sterile N_2 is introduced in the container (1) and/or the cylinder (4) simultaneously to the ionization to help the dosing and provide the required sterile conditions.

7) Method according to any of the preceding claims, wherein the filling of solid product in the container (1) of stage f) is performed by means of an endless screw, a gravimetric doser by weight loss equipped with a hopper and a high-precision nozzle, a single-thread doser, a double-thread doser, a doser with vibrating channel or with vibrating hopper, a doser equipped with conveyor belt, or a doser equipped with compacting system.

8) Method according to claim 7, wherein the hopper is equipped with a stirrer to guarantee a constant and fluid supply of the solid product in the container (1).

9) Method according to any of the preceding claims, wherein the cylinder (4) is equipped with a multiplicity of inner cavities (5), each one of which is capable of receiving a container (1).

10) Method according to claim 9, wherein the weighing cell (9) is multiple with the aim of being able to weigh the multiplicity of containers (1) equipped in the multiplicity of inner cavities (5) of the cylinder (4).

11) Method according to any of the preceding claims, wherein the container (1) is a syringe, vial, capsule, ampoule, single-dose device, inhaler, bottle, carpule blister, sachet or bag designed to contain solid substances.

12) Method according to claim 11, wherein the container (1) is a syringe or carpule.

13) Method according to any of the preceding claims, wherein the cylinder (4) is a metal cylinder of titanium, steel, plastic, crystal, glass, stone or resin.

14) Method according to claim 13, wherein the cylinder (4) is equipped with an outer ridge designed so that the cylinder (4) can be supported by means of pliers or clamps, or also so that the cylinder (4) can be displaced by means of rails elevated from some points to others of the filling stations.

15) Method according to any of the preceding claims, wherein the projection (11) provided on the surface (10) of the weighing cell (9) has generally cylindrical form and its upper surface has substantially flat, conical or truncated cone shape.

16) Method according to any of the preceding claims, wherein the solid product to be filled in the container (1) has the following distribution of particle sizes:

- no more than 10% of the total volume of particles is less than 20 microns,
- no more than 10% of the total volume of particles is greater than 230 nor less than 140,
- a value d0.5 in the range of 60-160 microns,

where d0.5 indicates the mean value of the particle size that divides the population exactly in two equal halves, with 50% of the distribution above this value, and 50% below.

17) Method according to any of preceding claims 1 to 15, wherein the solid product to be filled in the container (1) has the following distribution of particle sizes:

- no more than 10% of the total volume of particles is less than 20 microns,

- no more than 10% of the total volume of particles is greater than 325 nor less than 245,
- a value d0.5 in the range of 100-155 microns,

18) Method according to claims 16 or 17, wherein the solid product to be filled in the container (1) is selected from the group consisting of risperidone, paliperidone, fentanyl, olanzapine, letrozole, aripiprazole, anastrozole, asenapine, brexpiprazole, cariprazine, clozapine, iloperidone, lurasidone, quetiapine, ziprasidone, including any derivative, metabolite or salt thereof, alone or in combination.

19) Method according to any of the preceding claims, which is performed in an aseptic environment in a laminar air flow cabin.