## Claims

1. A mineral composition comprising calcium carbonate particles, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre, having an intruded total specific void volume of 0.1 to 0.3 $cm^3/g$ and having a volume defined pore size polydisperity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre.

2. A mineral composition according to claim 1, chosen among natural calcium carbonate or precipitated calcium carbonate or their mixtures.

3. A mineral composition according to claim 1 or 2, wherein the formulation of the mineral composition is selected from the group consisting of a coating composition, filler, surface filling, and a mineral slurry.

4. A substrate comprising a mineral composition which comprises mineral particles, said mineral particles, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre, having an intruded total specific void volume of 0.1-0.3 $cm^3/g$ and having a volume defined pore size polydisperity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre.

5. A substrate according to claim 4 comprising one or more formulations of the mineral composition, said formulation selected from the group consisting of a coating composition, filler, surface filling, and a mineral slurry or mixtures thereof.

6. A substrate according to claim 4 or 5, said substrate being selected from the group consisting of paper, cardboard, plastic, textile, wood, metal, concrete, or ointment.

7. A method for producing a mineral particle fine fraction from a feed material, the mineral particle fine fraction, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre, having an intruded total specific void volume of 0.1-0.3 $cm^3/g$ and having a volume defined pore size polydisperity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre, the method comprising:

   - providing the feed material to a milling machine, producing a first milled feed material,

   - feeding the first milled feed material into a disc stack centrifuge, producing two mineral particle fractions, one being the mineral particle fine fraction and a second being a mineral particle coarse fraction,

   - either feeding a part or all of the mineral particle coarse fraction to a milling machine and/or to a disc stack centrifuge and/or taking off a part or all of the mineral particle coarse fraction.

8. A method for producing a mineral particle fine fraction according to the claim 7, the mineral particle fine fraction, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre, and having an intruded total specific void volume of 0.1-0.3 $cm^3/g$, and having a volume defined pore size polydisperity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre, the method comprising:

   - providing the feed material to a milling machine, producing a first milled feed material,

   - feeding the first milled feed material into a disc stack centrifuge, producing two mineral particle fractions, one being the mineral

particle fine fraction and a second being a mineral particle coarse fraction, wherein the first milled feed material has a solids contents in the range of 20%-80% by weight, preferably in the range of 30%-75% by weight, more preferably in the range of 38%-70% by weight.

9. A method for producing a mineral particle fine fraction, the mineral particle fine fraction, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre, having an intruded total specific void volume of 0.1-0.3 $cm^3/g$ and having a volume defined pore size polydisperity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre, the method comprising:

   - providing the feed material to one or more dry and/or wet grinding machines, producing said mineral particle fine fraction in one or more grinding steps.

10. A method according to any one of claims 7-9, said process functioning in a continuous manner.

11. Use of a mineral composition according to any one of the claims 1-3 in paper application like paper manufacturing, paper coating, ink jet paper top-coating, offset printing.

12. Use of a mineral composition according to any one of the claims 1-3 in textile and cardboard application.

13. Use of a mineral composition according to any one of the claims 1-3 in wood, metal, concrete and ointment.

## Claims

1. A mineral composition comprising ground marble particles, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre determined by mercury porosimetry and having an intruded total specific void volume of 0.1 to 0.3 $cm^3/g$ determined by mercury porosimetry and having a volume defined pore size polydispersity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre, whereby the full width at maximum height is an expression of the extent of the distribution of the pore size diameters to be found between the marble particles given by the difference between the two extreme values of the independent variable at which the dependent variable is equal to half of its maximum height.

2. A mineral composition according to claim 1, wherein the formulation of the mineral composition is selected from the group consisting of a coating composition, filler, surface filling, and a mineral slurry.

3. A substrate comprising a mineral composition which comprises ground marble particles, said ground marble particles, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre determined by mercury porosimetry and having an intruded total specific void volume of 0.1 to0.3 $cm^3/g$ determined by mercury porosimetry and having a volume defined pore size polydispersity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre, whereby the full width at maximum height is an expression of the extent of the distribution of the pore size diameters to be found between the marble particles given by the difference between the two extreme values of the independent variable at which the dependent variable is equal to half of its maximum height.

4. A substrate according to claim 3 comprising one or more formulations of the mineral composition, said formulation selected from the group consisting of a coating composition, filler, surface filling, and a mineral slurry or mixtures thereof.

5. A substrate according to claim 3 or 4, said substrate being selected from the group consisting of paper, cardboard, plastic, textile, wood, metal, concrete, or ointment.

6. A method for producing a ground marble particle fine fraction from a feed material, the ground marble particle fine fraction, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre determined by mercury porosimetry, and having an intruded total specific void volume of 0.1 to 0.3 $cm^3/g$ determined by mercury porosimetry and having a volume defined pore size polydispersity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre, whereby the full width at maximum height is an expression of the extent of the distribution of the pore size diameters to be found between the marble particles given by the difference between the two extreme values of the independent variable at which the dependent variable is equal to half of its maximum height, the method comprising:

- providing the feed material to a milling machine, producing a first milled feed material,

  feeding the first milled feed material into a disc stack centrifuge, producing two mineral particle fractions, one being the ground marble particle fine fraction and a second being a ground marble particle coarse fraction,

  either feeding a part or all of the ground marble particle coarse fraction to a milling machine and/or to a disc stack centrifuge

and/or taking off a part or all of the ground marble particle coarse fraction.

7. A method for producing a ground marble particle fine fraction according to the claim 6, the ground marble particle fine fraction, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre determined by mercury porosimetry, and having an intruded total specific void volume of 0.1 to 0.3 $cm^3/g$ determined by mercury porosimetry, and having a volume defined pore size polydispersity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre, whereby the full width at maximum height is an expression of the extent of the distribution of the pore size diameters to be found between the marble particles given by the difference between the two extreme values of the independent variable at which the dependent variable is equal to half of its maximum height, the method comprising:

   - providing the feed material to a milling machine, producing a first milled feed material,

   - feeding the first milled feed material into a disc stack centrifuge, producing two ground marble particle fractions, one being the ground marble particle fine fraction and a second being a ground marble particle coarse fraction, wherein the first milled feed material has a solids contents in the range of 20% to 80% by weight, preferably in the range of 30% to 75% by weight, more preferably in the range of 38% to 70% by weight.

8. A method for producing a ground marble particle fine fraction, the groundmarble particle fine fraction, when in a densely compacted bed form, having a monomodal pore diameter distribution, having a volume defined median pore diameter from 0.01 to 0.04 micrometre determined by mercury porosimetry, and having an intruded total specific void volume of 0.1 to 0.3 $cm^3/g$ determined by mercury porosimetry and having a

volume defined pore size polydispersity expressed as full width at maximum height (FWMH) in the range of 0.01 to 0.03 micrometre, whereby the full width at maximum height is an expression of the extent of the distribution of the pore size diameters to be found between the marble particles given by the difference between the two extreme values of the independent variable at which the dependent variable is equal to half of its maximum height, the method comprising:

- providing the feed material to one or more dry and/or wet grinding machines, producing said mineral particle fine fraction in one or more grinding steps.

9. A method according to any one of claims 6 to 7, said process functioning in a continuous manner.

10. Use of a mineral composition according to any one of the claims 1or 2 in paper application like paper manufacturing, paper coating, ink jet paper top-coating, offset printing.

11. Use of a mineral composition according to any one of the claims 1 or 2 in textile and cardboard application.

12. Use of a mineral composition according to any one of the claims 1 or2 in wood, metal, concrete and ointment.