Acceleration voltage: 15 V

Magnification: 5000×

<Density of Calcined Body>

A mass of the calcined body was determined by performing a measurement with an electronic balance, and a volume thereof was determined from dimensions measured with a caliper. A measured density was determined from the obtained mass and volume and taken as the density of the calcined body.

<Density of Sintered Body>

The mass of the sintered body was determined by performing a measurement with an electronic balance, and a volume thereof was determined with an Archimedes method in accordance with JIS R 1634. A measured density was determined from the obtained mass and volume and taken as the density of the sintered body. The Archimedes method was performed by using ion-exchanged water as a solvent, and a pretreatment was performed with a boiling method.

<Shade>

The shade was measured with a spectrophotometer (instrument name: CM-700d, manufactured by Konica Minolta Inc.) equipped with illumination and detection optics in accordance with Geometric condition c of JIS Z 8722; the measurement was performed by a method (black background measurement) in which a black calibration box was disposed

as a background of the measurement sample. The measurement conditions were as follows.

[0066]

Light source: D65 light source

Viewing angle: 10°

Measurement mode: SCI

The shade of the powder samples was measured as follows. 3.0 g of each of the powders was loaded into a mold having a diameter of 25 mm and was uniaxially pressed at a pressure of 19.6 MPa. Then, the uniaxially pressed compact was subjected to a CIP process at a pressure of 196 MPa and formed to have a disc shape with a thickness of 3.0 ± 0.5 mm. A measurement surface thereof was polished with #800 waterproof abrasive paper to reduce the thickness by 0.1 mm and then was measured.

[0067]

The shade of the calcined body samples was determined by performing the measurement after polishing the measurement surface with #800 waterproof abrasive paper to reduce the thickness by 0.1 mm.

[0068]

Shade of the sintered body samples were each measured after both surfaces of the sintered body were mirror-polished to have a thickness of 1.0 ± 0.1 mm and a surface roughness (Ra) of 0.02 μm or less.

bodies (dental prostheses) obtained from the recycled powders are sintered bodies comparable to sintered bodies (dental prostheses) prepared from synthetic powders.

[0082]

Example 25-28 <Production of Recycled Blank from Mixed Powder>

Mixed powders were prepared in a manner similar to that of Synthesis Example 1, except that the recycled powders obtained in Examples 5 to 8 and synthetic powders (product names: Zpex 4-Yellow, Zpex-Gray and Zpex-Pink, all manufactured by Tosoh Corporation) that served as toning powders were used, and that the compounding ratios shown in the table below were employed.

[0083]

[Table 7]

	Powder Compounding Ratios				
	Recycled Powder		Zpex 4-Yellow [wt%]	Zpex-Pink [wt%]	Zpex-Gray [wt%]
	Type	Compounding Ratio [wt%]			
Example 25	Example 5	31.7	56.0	5.2	7.1
Example 26	Example 6	62.8	36.0	1.2	0.0
Example 27	Example 7	28.5	57.3	0.8	13.4
Example 28	Example 8	86.2	12.8	1.0	0.0

[0084]

Recycled blanks were obtained in a manner similar to that of Examples 13 to 24, except that the obtained mixed powders were used. The evaluation results of the obtained

CLAIMS

[Claim 1]

A method for producing a recycled powder, the method comprising:

a grinding step of grinding scrap materials of dental blanks to provide a ground product; and

a collection step of collecting, from the ground product, a powder having a shade that has an L^* of 90 or greater and 100 or less, an a^* of 0 or greater and 1 or less and a b^* of 0 or greater and 5 or less

wherein the collection step includes separating the ground product provided in the grinding step into several units and then collecting, from the several units, a unit corresponding to a portion of the ground product, the portion having a shade that has an L^* of 90 or greater and 100 or less, an a^* of 0 or greater and 1 or less and a b^* of 0 or greater and 5 or less.

[Claim 2]

The method for producing a recycled powder according to claim 1, further comprising a separation step of separating the scrap materials prior to the grinding step.

[Claim 3]

The method for producing a recycled powder according to claim 2, wherein the separation step includes separating the scrap materials into a first shade unit and a second shade

unit, the first shade unit is formed of at least one scrap material having a base shade that has an L^* of 90 or greater and 100 or less, an a^* of 0 or greater and 1 or less and a b^* of 0 or greater and 5 or less, and the second shade unit is formed of at least one scrap material having a shade different from the base shade.

[Claim 4]

The method for producing a recycled powder according to claim 1 or 2, wherein the grinding step includes a coarse grinding step and a particle size adjustment step, the coarse grinding step is a step of dry-grinding the scrap materials to provide a coarsely ground product, and the particle size adjustment step is a step of wet-grinding the coarsely ground product.

[Claim 5]

The method for producing a recycled powder according to claim 1 or 2, wherein the scrap materials of dental blanks are ceramic calcined bodies.

[Claim 6]

A method for recycling dental blanks, the method comprising:

a grinding step of grinding scrap materials of the dental blanks to provide a ground product; and

a collection step of collecting, from the ground product, a powder having a shade that has an L^* of 90 or

greater and 100 or less, an a^* of 0 or greater and 1 or less and a b^* of 0 or greater and 5 or less

wherein the collection step includes separating the ground product provided in the grinding step into several units and then collecting, from the several units, a unit corresponding to a portion of the ground product, the portion having a shade that has an L^* of 90 or greater and 100 or less, an a^* of 0 or greater and 1 or less and a b^* of 0 or greater and 5 or less.

[Claim 7]

A method for producing a recycled dental blank, the method comprising using the recycled powder obtainable according to claim 1 or 2.