example, the following conditions.

Measurement sample : A disk shape with a thickness of 3.0 ± 0.5 mm

Measurement load : 1 kgf

[0059] Prior to the measurement, pretreatment may be performed by polishing the measurement surface of the measurement sample with #800 waterproof abrasive paper to remove irregularities exceeding 0.1 mm.

[0060] The term "light transmittance" refers to a total light transmittance measured for a measurement sample having a sample thickness of 1 mm in accordance with JIS K 7361-1. The light transmittance may be measured using, as a measurement sample, a disk-shaped sintered body having a sample thickness of 1 mm and having both surfaces with a surface roughness Ra of 0.02 μm or less and using, as a measuring device, a haze meter (for example, Haze meter NDH4000, manufactured by Nippon Denshoku Industries Co., Ltd.) equipped with a D65 light source as a light source.

[0061] The term "biaxial flexural strength" refers to a value determined by a two-point bending test according to JIS T 6526. The measurement of the biaxial flexural strength may be performed 10 times using, as a measurement sample, a disk-shaped sintered body with a diameter of 14.5 mm ± 0.5 mm and a thickness of 1.25 mm ± 0.05 mm under the conditions of a support circle radius of 6 mm and an indenter radius of 0.7 mm, and the average value obtained in this case may be defined as the biaxial flexural strength of the sintered body.

[0062] The term "Weibull coefficient" refers to a value calculated by a method according to JIS R 1625. Specifically, the measurement of the

composition may include first stabilized zirconia particles and second stabilized zirconia particles. The powder composition may include three or more types of stabilized zirconias (stabilized zirconia particles).

[0090] Since densification in short-time sintering is likely to be promoted, the BET specific surface area of the first stabilized zirconia is preferably equal to or larger than the BET specific surface area of the second stabilized zirconia, and the BET specific surface area of the first stabilized zirconia is preferably larger than the BET specific surface area of the second stabilized zirconia by 0 m^2/g or more, 1.5 m^2/g or more, or 2.0 m^2/g or more. It is not necessary to make the difference in BET specific surface area unnecessarily large, and, for example, the difference between the BET specific surface area of the first stabilized zirconia and the BET specific surface area of second stabilized zirconia may be 8.0 m^2/g or less, 6.0 m^2/g or less, or 3.5 m^2/g or less.

[0091] The BET specific surface area of the first stabilized zirconia may be, for example, 8 m^2/g or more, 10 m^2/g or more, 12 m^2/g or more, or 14 m^2/g or more, and 16 m^2/g or less or 15 m^2/g or less.

[0092] The stabilizing element content of the powder composition (that is, the content of a stabilizing element in the powder composition) of the present embodiment is more than 4.0 mol% and 5.8 mol% or less. If the stabilizing element content is 4.0 mol% or less, a sintered body satisfying translucency required for prosthetic anterior teeth cannot be obtained by short-time sintering. On the other hand, if the content of the stabilizing element exceeds 5.8 mol%, it is difficult to stably produce a sintered body satisfying translucency required for prosthetic anterior teeth through short-time sintering. The stabilizing element content of the powder

composition of the present embodiment is preferably more than 4.0 mol%, 4.2 mol% or more, 4.4 mol% or more, 4.5 mol% or more, 4.7 mol% or more, 4.8 mol% or more, or 5.0 mol% or more, and preferably 5.8 mol% or less, 5.7 mol% or less, or 5.5 mol% or less. In the present embodiment, the stabilizing element content of the powder composition may be determined by ICP analysis.

[0093] Preferably, the powder composition of the present embodiment does not contain an undissolved stabilizing element. The phrase "not contain an undissolved stabilizing element" refers to a state in which, in the XRD measurement and the analysis of an XRD pattern described above, an XRD peak derived from a compound of a stabilizing element (for example, an oxide of a stabilizing element, such as yttria (Y_2O_3)) is not observed, and the powder composition of the present embodiment is allowed to contain an undissolved stabilizing element to the extent that the effects of the powder composition are not impaired.

[0094] The stabilizing element is preferably one or more selected from the group consisting of yttrium (Y), calcium (Ca), and magnesium (Mg). Yttrium, calcium, and magnesium function as the stabilizing element without coloring zirconia. The stabilizing element may include yttrium or may be yttrium alone.

[0095] A preferred yttrium content of the powder composition of the present embodiment may be more than 4.0 mol%, 4.2 mol% or more, 4.4 mol% or more, 4.5 mol% or more, 4.7 mol% or more, 4.8 mol% or more, or 5.0 mol% or more, and 5.8 mol% or less, 5.7 mol% or less, or 5.5 mol% or less.

[0096] In order to finely adjust ΔV, the powder composition of the

difference between the surface grain size and the internal grain size is determined, and this may be defined as the difference in crystal grain size.

[0171] The T' phase fraction of the sintered body of the present embodiment is preferably 70% or more, 80% or more, or 90% or more. The T' phase fraction may be 100% or less or 99% or less.

[0172] The light transmittance of the sintered body of the present embodiment is preferably more than 45%, 46% or more, or 47% or more. The light transmittance satisfying this value enables applications to, for example, dental prosthetic materials such as prosthetic anterior teeth, in particular, dental prosthetic materials that require high translucency. The light transmittance in the range of the stabilizing element content of the sintered body of the present embodiment may be, for example, 52% or less, 51% or less, or 50% or less.

[0173] The C phase fraction of the sintered body of the present embodiment is preferably less than 30%, 10% or less, 5% or less, 1% or less, or 0.5% or less. The sintered body of the present embodiment may not contain the C phase (the C phase fraction may be 0%), and the C phase fraction of the sintered body of the present embodiment may be 0% or more.

[0174] The biaxial flexural strength of the sintered body of the present embodiment is preferably 650 MPa or more, 700 MPa or more, 720 MPa or more, 740 MPa or more, 770 MPa or more, 790 MPa or more, or 800 MPa or more. When such a biaxial flexural strength is satisfied, the sintered body of the present embodiment is also applicable to dental prostheses having smaller shapes. The higher the biaxial flexural

strength, the better. When the stabilizing element content of the present embodiment is satisfied, the

[0198] (Light transmittance)

The light transmittance (total light transmittance) was measured by a method according to JIS K 7361-1 with a haze meter (device name: NDH4000, manufactured by Nippon Denshoku Industries Co., Ltd.) using a D65 light source. The measurement sample used was a disk-shaped sintered body with a thickness of 1 mm, both surfaces of which were polished so as to have a surface roughness Ra of 0.02 μm or less.

[0199] (Light transmittance ratio)

A ratio of the light transmittance [%] of a short-time sintered boy (described later) to the light transmittance [%] of a normal sintered boy (described later) was determined as a light transmittance ratio.

[0200] (Biaxial flexural strength)

The biaxial flexural strength was measured by a method according to JIS T 6526. The measurement was performed 10 times, and the average value was determined. The measurement was performed using a disk-shaped sintered body sample with a diameter of 14.5 mm ± 0.5 mm and a thickness of 1.25 mm ± 0.05 mm under the conditions of a support circle radius of 6 mm and an indenter radius of 0.7 mm. The cross-head speed was 0.5 mm/min.

[0201] (Weibull coefficient)

The Weibull coefficient was calculated by a method according to JIS R 1625. The measurement of the biaxial flexural strength was performed 15 times under the conditions of a support circle radius of 6 mm and an indenter radius of 0.7 mm using, as a measurement sample, a disk-shaped sintered body with a diameter of 14.5 mm ± 0.5 mm and a thickness of 1.25 mm ± 0.05 mm. The Weibull coefficient was

determined by the

was 6.0 mol%. This was used as a powder composition of Comparative Example 6. The difference in stabilizing element content between the stabilized zirconias included in the powder composition was 5.0 mol%.

[0234] Table 1 shows the stabilizing element contents (Y_2O_3: mol%) in the powders contained in each of the slurries prepared in Examples and Comparative Examples and the difference in stabilizing element content (difference in Y_2O_3). Table 2 shows the stabilizing element content (mol% of Y_2O_3), the content of an additional element in terms of oxide, and properties of each of the powder compositions obtained in Examples and Comparative Examples.

[0235] [Table 1]

	Powder in slurry A		Powder in slurry B		Difference in Y_2O_3 (mol%)
	Y_2O_3 (mol%)	BET specific surface area (m^2/g)	Y_2O_3 (mol%)	BET specific surface area (m^2/g)	
Example 1	2.5	11.9	5.5	9.7	3.0
Example 2	2.5	11.9	5.5	9.7	3.0
Example 3	2.5	9.7	5.5	9.7	3.0
Example 4	2.5	14.4	5.5	9.7	3.0
Example 5	2.5	11.9	5.5	9.7	3.0
Example 6	2.5	14.4	5.5	10.8	3.0
Example 7	1.5	11.9	5.5	9.7	4.0
Example 8	2.5	11.9	6.5	10.3	4.0
Example 9	2.5	11.9	5.5	9.7	3.0
Example 10	2.5	11.9	5.5	9.7	3.0
Comparative Example 1	2.5	10.0	5.5	10.0	3.0
Comparative Example 2	1.5	11.4	5.5	10.0	4.0
Comparative Example 3	2.0	10.2	8.5	12.4	6.5
Comparative Example 4	Not used		5.5	10.0	0
Comparative Example 5	Not used		5.5	10.0	0
Comparative Example 6	2.5	11.3	7.5	11.9	5.0

[0236] [Table 2]

	Powder composition						
	Y_2O_3 (mol%)	Al_2O_3 (wt%)	BET specific surface area (m^2/g)	T+C phase fraction (%)	ΔV_{1300} (%°C^{-1})	ΔV_{1500} (%°C^{-1})	ΔV_{1300} -ΔV_{1500} (%°C^{-1})
Example 1	4.5	0	10.4	-	0.061	0.021	0.040
Example 2	5.2	0	9.9	90	0.058	0.017	0.041
Example 3	5.2	0	9.7	92	0.056	0.026	0.030
Example 4	5.2	0	10.2	91	0.059	0.020	0.039
Example 5	5.4	0	9.8	-	0.061	0.019	0.042
Example 6	5.2	0	11.2	94	0.061	0.017	0.044
Example 7	5.2	0	9.9	85	0.056	0.015	0.041
Example 8	5.2	0	10.8	65	0.062	0.021	0.041
Example 9	5.0	0	10.1	85	0.059	0.018	0.041
Example 10	5.0	0	10.1	85	0.059	0.017	0.042
Comparative Example 1	4.0	0.05	10.0	71	0.075	0.012	0.063
Comparative Example 2	5.2	0.05	10.1	90	0.075	0.009	0.066
Comparative Example 3	5.2	0	11.3	62	0.062	0.013	0.049
Comparative Example 4	5.5	0.05	10.0	99	0.073	0.010	0.063
Comparative Example 5	5.5	0	10.0	99	0.068	0.014	0.054
Comparative Example 6	6.0	0	11.6	62	0.065	0.013	0.052

In Table, "-" indicates unmeasured.

[0237] In Examples 2 to 4 and 6 to 8, the stabilizing element contents (yttrium contents) of the powder compositions are equal to each other. Compared with Example 2, in Example 4, the yttrium-containing zirconia having an yttrium content of 2.5 mol% has a high BET specific surface area, and ΔV_{1300} and ΔV_{1500} of the powder composition can be confirmed to be fast. Furthermore, in Example 3, which included an yttrium-containing zirconia having an yttrium content of 2.5 mol%, the yttrium-

more stabilized zirconias having different stabilizing element contents.

[0244] <Production of calcined body>

[Examples 11 to 17, Comparative Example 7, and Comparative Example 9]

Powder compositions obtained by the same methods as those in Examples 2 and 5 to 10 and Comparative Examples 2, 3, and 5 were each placed in a die with a diameter of 25 mm, subjected to uniaxial pressing at a pressure of 49 MPa, and subjected to CIP treatment at a pressure of 196 MPa to obtain green bodies. The green bodies were calcined in an air atmosphere at a calcination temperature of 1,000°C for one hour to obtain calcined bodies of Examples 11 to 17 and calcined bodies of Comparative Examples 7 to 9. Table 3 shows the powder compositions used in Examples and Comparative Examples and properties of the calcined bodies.

[0245] [Table 3]

	Precursor (Powder composition)	Calcined body density (g/cm^3)	Vickers hardness (kgf/mm^2)	T+C phase fraction (%)	ΔV_{1300} (%°C^{-1})	ΔV_{1500} (%°C^{-1})	ΔV_{1300} -ΔV_{1500} (%°C^{-1})
Example 11	Example 2	3.08	-	100	0.060	0.023	0.037
Example 12	Example 5	3.02	-	-	0.061	0.017	0.044
Example 13	Example 6	3.09	46	100	0.062	0.018	0.044
Example 14	Example 7	3.09	45	100	0.057	0.014	0.043
Example 15	Example 8	3.09	44	100	0.061	0.019	0.042
Example 16	Example 9	3.09	46	100	0.058	0.017	0.041
Example 17	Example 10	3.08	46	100	0.060	0.019	0.041
Comparative Example 7	Comparative Example 2	3.05	49	100	0.078	0.009	0.069
Comparative Example 8	Comparative Example 3	3.11	-	-	0.063	0.013	0.050
Comparative Example 9	Comparative Example 5	3.09	40	-	-	-	-

In Table, "-" indicates unmeasured.

[0246] ΔV_{1300} of Example 2 is 0.058%°C^{-1}, and ΔV_{1300} of Example 11 is 0.060%°C^{-1}. It can be confirmed from this that a powder composition and a calcined body obtained by calcining the powder composition have ΔV_{1300} equivalent to each other. The calcined body of Example 11 has a T + C phase fraction of 100%. It can be confirmed from this that the T + C phase fraction of the calcined body becomes higher than that of the powder composition through the heat treatment. It can be confirmed that Examples 12 to 17 and Examples 5 to 10, which are corresponding precursors, have ΔV_{1300} equivalent to each other. It can be confirmed that the calcined bodies of Examples 13 to 17 have a T + C phase fraction of 100%.

[0247] The calcined bodies of Examples can be confirmed to have a Vickers hardness suitable for shape processing such as CAM processing.

[0248] <Measurement of stabilizing element weight (yttrium

content) by