

Table 3 - Continued

No	Powder used	Foamed product				
		Bulk density (g/cm <sup>3</sup> )	Color	Abrasion hardness (wt.%)	Alkali resistance (wt.%)	Compressive strength (kg/cm <sup>2</sup> .mm)
10	Red mud	0.45	Red	73.9	98.1	3.2
11	Talc	0.33	White	72.5	92.9	2.8
12	Zircon	0.38	do.	78.0	97.8	3.8
13	Ilmenite	0.36	do.	70.6	97.2	3.5
14	Siliceous sand	0.27	do.	72.1	94.1	2.9
15	None	0.23	do.	52.4	68.4	2.2

## EXAMPLE 4

Various compound oxides having particle sizes of 0.5 to 2 $\mu$  were added to the silica sol of Comparison Example 2 in an amount of 2% by weight based on the weight of SiO<sub>2</sub> in the sol. Each of the resulting sols was gelled, washed with water and dried in the same manner as in Example 1 to prepare a silica gel containing about 1.8% by weight of a water-soluble component (Glauber's salt). The silica gel was fired at 1300°C for 7 minutes to obtain a foamed product. The silica gel used was such that is passed through a 6-mesh screen but was retained on a 24-mesh screen. The properties of the foamed products are shown in Table 4 below.

Table 4

No.	Compound oxide used	Foamed product				
		Bulk density (g/cm <sup>3</sup> )	Color	Abrasion hardness (wt.%)	Alkali resistance (wt.%)	Compressive strength (kg/cm <sup>2</sup> .mm)
1	A	0.39	Yellow	67.7	96.2	3.9
2	B	0.38	Blue	69.4	94.8	5.8
3	C	0.45	Green	72.1	96.8	6.4
4	Not used	0.29	White	50.1	65.8	2.0

Note: 1. Compound oxide A shows TiO<sub>2</sub>, NiO.Sb<sub>2</sub>O<sub>3</sub> ["Tiquaque TY 50", trade mark, yellow pigment of Ishihara Sangyo Kabushiki Kaisha, Japan].  
2. Compound oxide B shows Cr<sub>2</sub>O<sub>3</sub>, ZnO.Al<sub>2</sub>O<sub>3</sub> ["Peacock 1001", trade mark, green pigment of Kabushiki Kaisha Katsurakemi, Japan].  
3. Compound oxide C shows a 1:1 weight ratio mixture of Compound A shown above and CoO.ZnO.Al<sub>2</sub>O<sub>3</sub> ["Green 2002", trade mark, green pigment of Kabushiki Kaisha Katsurakemi, Japan].

## EXAMPLE 5

The silica gels obtained in Example 4 were pre-fired at 680°C for 40 minutes and then fired at 1300°C for 7 minutes, whereby foamed products having the properties shown in Table 5 below were obtained.

Table 5

No.	Compound oxide used	Foamed product				
		Bulk density (g/cm <sup>3</sup> )	Color	Abrasion hardness (wt.%)	Alkali resistance (wt.%)	Compressive strength (kg/cm <sup>2</sup> .mm)
1	A	0.32	Yellow	95.6	97.9	4.3
2	B	0.31	Blue	96.5	98.7	9.0
3	C	0.34	Green	97.2	98.6	9.9

Note: Compound oxides A, B and C are the same as shown in Table 4 before.

## EXAMPLE 6

A predetermined amount of zirconia (ZrO<sub>2</sub>) having a particle size of 0.1 to 10  $\mu$  was added in amounts shown in Table 6 below to silica sol obtained in Comparison Example 2 and the resulting sol was treated in the same manner as in Example 1 to prepare a silica gel containing about 1.6% by weight of a water-soluble component. A foamed product was obtained by the same treatment as in Example 1. The properties of the

resulting foamed product are given in Table 6 below.

Table 6

No.	Amount* of ZrO <sub>2</sub> (wt.%)	Foamed product			
		Bulk density (g/cm <sup>3</sup> )	Abrasion hardness (wt.%)	Alkali resistance (wt.%)	Compressive strength (kg/cm <sup>2</sup> .mm)
1	15	0.38	95.4	98.7	4.5
2	5	0.34	94.2	97.1	4.4
3	0.5	0.26	93.6	94.5	3.7
4	0.2	0.23	93.2	93.0	3.8
5	0.05	0.29	89.3	87.6	2.9

Note: \* The amount of ZrO<sub>2</sub> in wt.% is based on the weight of SiO<sub>2</sub> in the sol.

## What we claim is:

1. A process for manufacturing lightweight, non-hygroscopic foamed product of silica having a high order of mechanical strength and excellent chemical resistance which comprises adding to a silica sol at least one water-insoluble inorganic powder of ceramic raw

material, metal oxides other than alkali metal oxides and compound oxides of metal other than alkali metal having a particle size of 0.05 to 100  $\mu$  to produce a uniform mixture, gelling the resulting mixture at a pH of not higher than 7 to produce hydrosilica gel, drying the gel obtained to remove sorbed water and firing the dried silica gel at 1000° to 1600°C to effect foaming, said water-insoluble inorganic powder being added to the silica sol in an amount of 0.1 to 20% by weight, based on the weight of SiO<sub>2</sub> in the sol.