

9.91 g of monomer mixture of the same composition as under (A) and the mixture is processed to a second paste.

Mixing pastes (A) and (B) in weight ratio 1:1 gives test pieces with the following physical properties:

flexural strength:	58.2 N/mm <sup>2</sup>
flexural modulus:	3,450 N/mm <sup>2</sup>
diametral tensile strength:	30.5 N/mm <sup>2</sup>

### EXAMPLE 7

#### (A)

0.2 g of benzoyl peroxide and 4.5 g of the silicic acid described in Example 6 (A) are added to a monomer mixture of

5.3 g of bis-GMA

3.5 g of TEGDMA and

1.0 g of pentaerythrol tetramethacrylate and the mixture is processed to a paste.

(B) 0.7 g of N,N-dimethyltoluidine and 4.6 g of the silicic acid from Example 6 (A) are added to 9.9 g of monomer mixture as in (A), and the mixture is processed to a second paste.

Mixing pastes (A) and (B) in a ratio of 1:1 gives test pieces with the following physical properties:

flexural strength:	52.8 N/mm <sup>2</sup>
flexural modulus:	3,517 N/mm <sup>2</sup>
diametral tensile strength:	32.3 N/mm <sup>2</sup>

### EXAMPLE 8

#### (A)

A paste is prepared from

9.8 g of the methacrylic ester of oxyalkylated bis-hydroxymethyl-tricyclo[5.2.1.0.2.6]decane (corresponding to European Patent No. 0,023,685, Example 1)

0.2 g of benzoyl peroxide and

4.8 g of the silicic acid described in Example 4.

(B) A second paste is prepared from

9.1 g of the above monomer,

0.9 g of bis-( $\beta$ -hydroxyethyl)-xylylidine and

4.9 g of the silicic acid described in Example 4.

After mixing pastes (A) and (B) in a ratio of 1:1, test pieces with the following physical properties are obtained:

flexural strength:	62.6 N/mm <sup>2</sup>
flexural modulus:	3,345 N/mm <sup>2</sup>
diametral tensile strength:	38.2 N/mm <sup>2</sup>

### EXAMPLE 9

(A) A paste is prepared from

6.9 g of bis-GMA

2.9 g of TEGDMA

0.2 g of benzoyl peroxide and

5.0 g of the silicic acid described in Example 4.

#### (B)

A second paste is prepared from

6.9 g of bis-GMA

2.9 g of TEGDMA

0.09 g of N-methyl-N- $\beta$ -(methylcarbamoyloxypropyl)-3,5-dimethylaniline and

5 5.0 g of the silicic acid described in Example 4.

After mixing pastes (A) and (B) in a ratio of 1:1, test pieces with the following physical properties are obtained:

flexural strength:	95.9 N/mm <sup>2</sup>
flexural modulus:	3,364 N/mm <sup>2</sup>
diametral tensile strength:	37.1 N/mm <sup>2</sup>

15 It will be understood that the specification and examples are illustrative but not limitative of the present invention and that other embodiments within the spirit and scope of the invention will suggest themselves to those skilled in the art.

20 What is claimed is:

1. In a polymerizable composition containing a polymerizable monomer and a microporous inorganic filler, the improvement which comprises employing as the filler one which has

- 25 (a) an average particle size of 0.5 to 50 $\mu$ ;  
 (b) a BET surface area of at least 200 m<sup>2</sup>/g;  
 (c) a pore volume of 0.7 to 5 ml/g, and  
 (d) a pore diameter of 10 to 50 nm.

30 2. A composition according to claim 1, wherein the composition is suitable for molding a dental material.

3. A composition according to claim 1, wherein the composition is suitable for molding a dental filling.

35 4. A composition according to claim 1, wherein the filler is silanized.

5. A composition according to claim 1, wherein the filler is at least one member selected from the group consisting of SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub> and calcium silicate.

6. A composition according to claim 1, wherein the filler comprises SiO<sub>2</sub>.

7. A composition according to claim 1, additionally containing about 1 to 40% by weight of a finely disperse inorganic filler having a particle size below 500 nm.

8. A composition according to claim 1, wherein the polymerizable monomer comprises a mixture of mono-functional and polyfunctional methacrylic acid esters.

9. A composition according to claim 1, wherein the polymerizable monomer comprises bis-GMA.

45 10. A composition according to claim 1, wherein the polymerizable monomer is one which is polymerized by light or by a free radical-forming agent.

11. A composition according to claim 1, wherein the filler has

- 55 (a) an average particle size of 1 to 20 $\mu$ ;  
 (b) a BET surface area of 300 to 600 m<sup>2</sup>/g;  
 (c) a pore volume of 1 to 3 ml/g; and  
 (d) a pore diameter of about 20 nm.

12. A composition according to claim 1, wherein the composition comprises by weight at least 20% of polymerizable monomer and at least 10% of the inorganic filler, any balance being made up of conventional additives.

60 13. A composition according to claim 12, wherein the composition by weight comprises 20 to 65% of polymerizable monomer and 10 to 60% of the inorganic filler.

14. A composition according to claim 12, wherein the composition by weight comprises 30 to 60% of poly-