CLAIMS

1. Photocatalytic composition, which comprises:

(a) at least one inorganic binder;

(b) at least one photocatalyst;

(c) at least one cellulose having a Brookfield viscosity RVT at 20°C from 100 to 70,000 mPa.s;

(d) at least one fluidizing agent;

(e) at least one first calcareous filler in the form of particles of which at least 95% by weight has a dimension not greater than 40 μm;

(f) at least one second calcareous filler in the form of particles of which at least 95% by weight has a dimension not greater than 20 μm, wherein the second calcareous filler has finer particle size than the first calcareous filler;

(g) at least one thermal insulator material comprising hollow ceramic spheres with sub-mm diameters, and

(h) glass bubble borosilicate microspheres.

2. Photocatalytic composition according to claim 1, in which:

(a) the inorganic binder is a cement binder, in the range of 20% to 50% by weight;

(b) the photocatalyst is Titanium Dioxide particles, photocatalytically active in the visible spectrum, comprising 0.5% to 5% by weight;

(c) the cellulose with very low viscosity is in the range of 0.8% to 2.2% by weight;

(d) the fluidizing agent is in the range of 0.1% to 1.2% by weight;

(e) the first calcareous filler is in the range of 15% to 35% by weight;

(f) the second calcareous filler is in the range of 15% to 35% by weight;

(g) the thermal insulator material comprising hollow ceramic spheres with sub-mm diameters is in the range of 0.1% to 4% by weight;

(h) the glass bubble borosilicate microspheres are in the range of 0.1% to 4% by weight.

3. Photocatalytic composition according to Claim 2, wherein the cement binder (a) is a Portland cement.

4. Photocatalytic composition according to Claims 2 or 3, wherein the photocatalyst is Titanium Dioxide particles in the anatase crystalline form.

5. Photocatalytic composition according to Claim 4, wherein the Titanium Dioxide particles in the anatase crystalline form has a granulometry such that at least 95% by weight has a dimension not higher than 50 nm, preferably not higher than 20 nm.

6. Photocatalytic composition according to claim 4 or 5, wherein the photocatalytic titanium dioxide is in admixture with a non-photocatalytic titanium dioxide, or wherein the photocatalytic titanium dioxide is in admixture with a non-photocatalytic titanium dioxide, wherein the non-photocatalytic titanium dioxide is in the range of 2% to 10% by weight.

7. Photocatalytic composition according to any preceding claim, wherein the cellulose (c) has a Brookfield viscosity RVT at 20°C from 100 to 30,000 mPa.s, preferably from 200 to 10,000 mPa.s.

8. Photocatalytic composition according to any one of the preceding claims, further comprising: at least one hydrophobized vinyl polymer, preferably a terpolymer of vinylchloride, ethylene and a vinyl ester CH2=CH-O-C(=O)-R, wherein R is an alkyl, linear or branched, C4-C24; or further comprising at least one hydrophobized vinyl polymer, preferably a terpolymer of vinylchloride, ethylene and a vinyl ester CH2=CH-O-C(=O)-R, wherein R is an alkyl, linear or branched, C4-C24, wherein the at least one hydrophobized vinyl polymer is in the range of 1% to 6% by weight.

9. Photocatalytic composition according to any one of the preceding claims, in which the fluidizing agent is polycarboxylic acid.

10. Photocatalytic composition according to any one of the preceding claims, including metakaolin in the range of 1.5% to 10% by weight, or including an anti-foaming agent in the range of 0.1% to 2.8% by weight.

11. Photocatalytic composition according to any one of the preceding claims, (i) wherein the hollow ceramic sub-mm spheres have a thermal conductivity below 0.20 W/mK, or (ii) wherein the hollow ceramic sub-mm spheres include a heat-reflective coating, or (iii)

wherein the hollow ceramic sub-mm spheres have an average diameter below 200 μm, or (iv) wherein the hollow ceramic sub-mm spheres have an average diameter below 50 μm.

12. Photocatalytic composition according to any one of the preceding claims, including an instantly dispersible pigment.

13. Use of a photocatalytic composition according to any one of claims from 1 to 12, for coating building artifacts in order to reduce the presence of polluting agents.

14. Use according to claim 13, wherein water is added to the photocatalytic composition in a predetermined proportion, by mixing until a homogeneous and fluid product is obtained.

15. Use according to claim 14, wherein the weight ratio between water and cement binder (a) is from 0.2 to 0.8.

16. Use according to any one of claims from 13 to 15, wherein, after application and drying, the photocatalytic composition forms a coating layer having a thickness from 0.05 mm to 1 mm, preferably from 0.1 to 0.5 mm.

17. Use of a photocatalytic composition according to any one of the claims from 1 to 12, for coating surfaces made of metal, wood or plastic material, e.g. polyvinylchloride (PVC).

18. Photocatalytic composition according to any of Claims 1 to 12, (i) not including heavy metals and organic solvents, or (ii) with a content of volatile organic compounds (VOC) of less than 0.35 g / litre, or (iii) including air-entraining agents, or (iv) including kieselguhr.

19. A coating obtained using a photocatalytic composition according to any of Claims 1 to 12, or Claim 18.

20. A dry mixture, having a composition according to any of Claims 1 to 12, or Claim 18, but not including water.

21. A photocatalytic coating, including the dry mixture of Claim 20, mixed with water.

22. A building or construction which has received a coating including a photocatalytic composition according to any of Claims 1 to 12, or Claim 18.

23. Method of manufacturing a photocatalytic composition, including mixing together the components of any of Claims 1 to 12, or Claim 18.