CLAIMS

1. A process for increasing the hydrophobicity of a porous product by treating the product, or a composition providing for the product, with a water repellent material, characterised in that the porous product or a composition providing the product, is treated with an aqueous suspension of microcapsules where the microcapsules comprise a water repellent organosilicon core material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, and a shell of a silicon-based network polymer comprising silica units.
2. A process according to claim 1 wherein the water repellent organosilicon core material is an organosilane comprising at least one silicon-bonded alkyl group having 1 to 30 carbon atoms, or a partial condensation product of such an organosilane.
3. A process according to any of claim 1 or 2 wherein the water repellent organosilane is an alkyltrialkoxysilane in which each alkoxy group has 1 to 4 carbon atoms.
4. A process according to any of claim 1 to 3 wherein the silicon-bonded alkyl group is an octyl group.
5. A process according to claim 1 wherein the water repellent organosilicon core material is a siloxane resin comprising siloxane units of the formula RSiO3/2 where R represents an alkyl group.
6. A process according to any of claim 1 or 5 wherein the groups R in the siloxane units of the formula RSiO3/2 comprise alkyl groups having 1 to 30 carbon atoms.
7. A process according to claim 1 wherein the water repellent organosilicon core material is a siloxane resin comprising siloxane units of the formula RSiO3/2 where R represents an aryl group.
8. A process according to any preceding claim where the microcapsules are obtainable by the addition of tetraalkoxysilane to an aqueous emulsion of a water repellent organosilicon material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, whereby the

tetraalkoxysilane condenses and polymerises at the interface of the droplets in the emulsion to form microcapsules.

9. A process according to claim 8 where a quaternised aminoalkylalkoxysilane is added to the aqueous emulsion before or simultaneously with the tetraalkoxysilane.
10. A process according to any preceding claim where the porous product is selected from cementitious substrates, clay-based bricks, gypsum-based substrates, lime-based substrates or wood-based substrates.
11. A process according to claim 1 wherein microcapsules comprising a water repellent organosilicon core material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, and a shell of a silicon-based network polymer comprising silica units are added to a cementitious composition and the composition is shaped and hardened to form the cementitious product.
12. A process according to Claim 11 for making a water repellent aerated cement product, wherein the microcapsules are added to a foamable cementitious composition.
13. A process according to claim 1 wherein microcapsules comprising a water repellent organosilicon core material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, and a shell of a silicon-based network polymer comprising silica units are added to a clay based composition and the composition is shaped and hardened to form the brick or tile product.
14. Use of microcapsules comprising a water repellent organosilicon core material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, and a shell of a silicon-based network polymer comprising silica units as a water repellent for a porous product.
15. Use according to claim 14 where the porous product is selected from cementitious substrates, clay-based bricks, gypsum-based substrates, lime-based substrates or wood-based substrates.

CLAIMS

1. A process for increasing the hydrophobicity of a porous product by treating the product, or a composition providing for the product, with a water repellent material, characterised in that the porous product or a composition providing the product, is treated with an aqueous suspension of microcapsules where the microcapsules comprise a water repellent organosilicon core material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, and a shell of a silicon-based network polymer comprising silica units.
2. A process according to claim 1 wherein the water repellent organosilicon core material is an organosilane comprising at least one silicon-bonded alkyl group having 1 to 30 carbon atoms, or a partial condensation product of such an organosilane.
3. A process according to any of claim 1 or 2 wherein the water repellent organosilane is an alkyltrialkoxysilane in which each alkoxy group has 1 to 4 carbon atoms.
4. A process according to any of claim 1 to 3 wherein the silicon-bonded alkyl group is an octyl group.
5. A process according to claim 1 wherein the water repellent organosilicon core material is a siloxane resin comprising siloxane units of the formula RSiO3/2 where R represents an alkyl group.
6. A process according to claim 5 wherein the groups R in the siloxane units of the formula RSiO3/2 comprise alkyl groups having 1 to 30 carbon atoms.
7. A process according to claim 1 wherein the water repellent organosilicon core material is a siloxane resin comprising siloxane units of the formula RSiO3/2 where R represents an aryl group.
8. A process according to any preceding claim where the microcapsules are obtainable by the addition of tetraalkoxysilane to an aqueous emulsion of a water repellent organosilicon material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, whereby the tetraalkoxysilane condenses and polymerises at the interface of the droplets in the emulsion to form microcapsules.
9. A process according to claim 8 where a quaternised aminoalkylalkoxysilane is added to the aqueous emulsion before or simultaneously with the tetraalkoxysilane.

10. A process according to any preceding claim where the porous product is selected from cementitious substrates, clay-based bricks, gypsum-based substrates, lime-based substrates or wood-based substrates.
11. A process according to claim 1 wherein microcapsules comprising a water repellent organosilicon core material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, and a shell of a silicon-based network polymer comprising silica units are added to a cementitious composition and the composition is shaped and hardened to form the cementitious product.
12. A process according to Claim 11 for making a water repellent aerated cement product, wherein the microcapsules are added to a foamable cementitious composition.
13. A process according to claim 1 wherein microcapsules comprising a water repellent organosilicon core material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, and a shell of a silicon-based network polymer comprising silica units are added to a clay based composition and the composition is shaped and hardened to form the brick or tile product.
14. Use of microcapsules comprising a water repellent organosilicon core material selected from an organosilane, a partially condensed organosilane and a branched siloxane resin, and a shell of a silicon-based network polymer comprising silica units as a water repellent for a porous product.
15. Use according to claim 14 where the porous product is selected from cementitious substrates, clay-based bricks, gypsum-based substrates, lime-based substrates or wood-based substrates.