CLAIMS

1. Composite yarn comprising a continuous multifilament core yarn incorporated in a matrix, characterized in that the matrix comprises at least one polymer material and at least one reinforcing filler, the reinforcing filler being formed from functionalized particles, said particles having a median size (d_{v50}) of less than 40 µm.

2. Composite yarn according to Claim 1, such that the particles have a hardness (Mohs) of less than or equal to the hardness of the constituent material of the filaments of the core yarn.

3. Composite yarn according to one of Claims 1 or 2, such that the particles have a median size (d_{v50}) comprised between 5 µm and 40 µm.

4. Composite yarn according to one of Claims 1 to 3, such that the particles have a size (d_{v90}) of less than 90 µm, preferably in the range from 30 µm to 90 µm.

5. Composite yarn according to one of Claims 1 to 4, such that the particles have a size (d_{v10}) of less than 15 µm, preferably in the range from 1 µm to 15 µm.

6. Composite yarn according to one of claims 1 to 5, such that the functionalized particles of the reinforcing filler are dispersed throughout the composite yarn matrix, the matrix being in contact with the core yarn filaments.

7. Composite yarn according to one of claims 1 to 6, such that some of the reinforcing filler is present in the inter-filament interstices of the core yarn.

8. Composite yarn according to one of Claims 1 to 7, such that the reinforcing filler is chosen from the group formed by functionalized fillers, preferably from the group formed by functionalized glass beads, functionalized calcium carbonate and functionalized talc.

9. Composite yarn according to one of Claims 1 to 8, such that the reinforcing filler is functionalized with at least one compound chosen from silanized agents, epoxies, and polyisocyanates, preferably silanized agents.

10. Composite yarn according to one of Claims 1 to 9, such that the matrix further comprises at least one fire-retardant filler.

11. Composite yarn according to one of Claims 1 to 10, such that the constituent material of the core yarn is chosen from silionne, basalt, aramids, polyesters, polyamides, carbon and polyvinyl alcohol.

12. Composite yarn according to one of Claims 1 to 11, such that the constituent material of the core yarn is silionne and the core yarn is a standard textile glass yarn.

13. Composite yarn according to one of Claims 1 to 11, such that the constituent material of the core yarn is silionne and the core yarn is a specific textile glass yarn.

~~14. Composite yarn according to one of Claims 1 to 13, further comprising at least one sheath layer enveloping said matrix, the layer comprising at least one polymer material and at least one reinforcing filler.~~

~~15. Composite yarn according to Claim 14, such that the reinforcing filler of said layer is of the same chemical nature as the reinforcing filler of said matrix.~~

~~16. Composite yarn according to either of Claims 14 and 15, such that said layer further comprises at least one fire-retardant filler.~~

~~17. Process for manufacturing a composite yarn according to one of Claims 1 to 16, said process comprising at least one step of depositing, by coating or extrusion, a matrix comprising a polymer material and a reinforcing filler, onto a core yarn.~~

~~18. Process for manufacturing according to claim 17, such that the reinforcing filler is dispersed throughout the polymer before depositing.~~

~~19. Process for manufacturing according to one of claims 17 or 18, such that some of the filler is present in the inter-filament interstices of the core yarn.~~

~~20. Process according to one of Claims 17 to 19, such that the depositing step is performed by coating with a plastisol on the filaments of the core yarn, the plastisol preferably being based on polyvinyl chloride (PVC) or based on acrylic resin.~~

~~21. Process according to one of Claims 17 to 20, further comprising at least one step of coating, on the composite yarn manufactured at the depositing step by coating or extrusion, of at least one layer of polymer material in which is dispersed at least one reinforcing filler, onto the composite yarn obtained in the depositing step.~~

~~22. Process according to Claim 21, such that the coating step is performed by coating with a plastisol or by extrusion of a compound.~~

~~23. Process according to either of Claims 21 and 22, such that the layer of polymer material further comprises at least one fire-retardant filler.~~

~~24. Textile surface comprising at least one composite yarn according to one of Claims 1 to 16 or manufactured according to one of Claims 17 to 23.~~

~~25. Textile surface according to Claim 24, characterized in that it is made by weaving.~~

CLAIMS

1. A composite yarn comprising a continuous multifilament core yarn incorporated in a matrix, wherein the matrix comprises at least one polymer material and at least one reinforcing filler, the reinforcing filler being formed from functionalized particles, said particles having a median size (d_{v50}) of less than 40 µm, said particles having a functionality added to their surface via at least one organic group to chemically or physicochemically link the reinforcing filler, the core yarn, and the matrix.

2. The composite yarn according to claim 1, wherein the particles have a hardness (Mohs) of less than or equal to the hardness of the constituent material of the filaments of the core yarn.

3. The composite yarn according to claim 1, wherein the particles have
a) a median size (d_{v50}) comprised between 5 µm and 40 µm,
b) a size (d_{v90}) of less than 90 µm,
c) a size (d_{v10}) of less than 15 µm, or
d) a combination of two or more thereof.

4. The composite yarn according to claim 1, wherein the functionalized particles of the reinforcing filler are dispersed throughout the composite yarn matrix, the matrix being in contact with the core yarn filaments.

5. The composite yarn according to claim 1, wherein some of the reinforcing filler is present in the inter-filament interstices of the core yarn.

6. The composite yarn according to claim 1, wherein the reinforcing filler is a) chosen from the group formed by functionalized fillers, b) functionalized with at least one compound chosen from silanized agents, epoxies, and polyisocyanates, or both a) and b).

7. The composite yarn according to claim 1, wherein the matrix further comprises at least one fire-retardant filler.

8. The composite yarn according to claim 1, wherein the constituent material of the core yarn is chosen from silionne, basalt, aramids, polyesters, polyamides, carbon and polyvinyl alcohol.

9. The composite yarn according to claim 1, wherein the constituent material of the core yarn is silionne and the core yarn is a) a standard textile glass yarn, or b) a specific textile glass yarn.

10. The composite yarn according to claim 1, further comprising at least one sheath layer enveloping said matrix, the sheath layer comprising at least one polymer material and at least one reinforcing filler.

11. The composite yarn according to claim 10, wherein a) the reinforcing filler of said sheath layer is of the same chemical nature as the reinforcing filler of said matrix, b) said sheath layer further comprises at least one fire-retardant filler, or both a) and b).

12. A process for manufacturing a composite yarn according to claim 1, said process comprising at least one step of depositing, by coating or extrusion, a matrix comprising a polymer material and a reinforcing filler, onto a core yarn.

13. The process according to claim 12, wherein the reinforcing filler is dispersed throughout the polymer before depositing.

14. The process according to claim 12, wherein some of the filler is present in the inter-filament interstices of the core yarn.

15. The process according to claim 12, wherein the depositing step is performed by coating with a plastisol on the filaments of the core yarn.

16. The process according to claim 12, further comprising at least one coating step, on the composite yarn manufactured at the depositing step by coating or extrusion, of at least one layer of polymer material in which is dispersed at least one reinforcing filler, onto the composite yarn obtained in the depositing step.

17. The process according to claim 16, wherein the coating step is performed by coating with a plastisol or by extrusion of a compound.

18. The process according to claim 16, wherein the layer of polymer material further comprises at least one fire-retardant filler.

19. A textile surface comprising at least one composite yarn according to claim 1.

20. The textile surface according to claim 19, wherein it is made by weaving.

21. The composite yarn according to claim 1, wherein the particles have
a) a median size (d_{v50}) comprised between 5 µm and 40 µm,
b) a size (d_{v90}) in the range from 30 µm to 90 µm,
c) a size (d_{v10}) in the range from 1 µm to 15 µm, or
d) a combination of two or more thereof.

22. The composite yarn according to claim 1, wherein the reinforcing filler is a) chosen from the group formed by functionalized glass beads, functionalized calcium carbonate and functionalized talc, b) functionalized with at least one compound chosen from silanized agents, or both a) and b).

23. The process according to claim 15, wherein the plastisol is based on polyvinyl chloride (PVC) or based on acrylic resin.

24. A textile comprising at least one composite yarn according to claim 1.

25. A textile according to claim 24, wherein the textile is selected from sunblinds, sun-blocking textiles, sun-screening textiles, sun-shielding textiles, and combinations thereof.

26. A sun protection fabric comprising at least one composite yarn according to claim 1.

27. A blind fabric comprising at least one composite yarn according to claim 1.