CLAIMS

1. Composite of which at least 90% of the surface is a structural multilayer composite (S), comprising a layer of leather (10); in contact with a first monolayer (20), said first monolayer (20) comprising parallel UHMWPE fibers aligned in a first fiber direction and a first matrix material whereby less than about 10% of the surface area remains flexible.

2. The multilayer composite of claim 1 further comprising a second monolayer (30) in contact with the first monolayer (20), said second monolayer (30) comprising parallel fibers aligned in a second fiber direction and a second matrix material, whereby the first monolayer (20) is rotated relative to the second monolayer (30) in said composite such that the second fiber direction is offset relative to the first fiber direction by up to 90 degrees.

3. The multilayer composite of claim 2, further comprising additional monolayers of parallel fibers, each monolayer comprising parallel fibers and a matrix, said monolayers stacked and arranged in said multilayer composite such that one monolayer of the additional monolayers is in contact with the second monolayer, and whereby each successive monolayer is rotated relative to an adjacent monolayer such that fiber directions are offset in each successive layer.

4. The multilayer composite according to any one of the claims 2 or 3 whereby the fiber density in the second or additional monolayers ranges between 1 and 50 grams per square meter.

5. The multilayer composite of claim 1, 2 or 3, further comprising a polymeric film (100) in contact with a monolayer such as to form an outer layer of the composite.

6. The multilayer composite of claim 5, whereby the film is waterproof/breathable.

7. The multilayer composite of any of the previous claims whereby the strength of the fibers is at least 0.5 GPa.

8. The multilayer composite of any of the previous claims whereby the strength of the fibers is at least 2.5 GPa.

9. The multilayer composite of any of the previous claims whereby the fibers are UHMWPE fibers with an intrinsic viscosity of at least 5 dl/g.

10. The multilayer composite of any of the previous claims whereby at least one matrix material has a stiffness of at least 3 MPa.

11. The multilayer composite of claim 10, whereby at least one matrix material comprises at least one of polyacrylate, polymers functionalized with acrylate groups, and polyurethane.

12. A process for manufacturing a composite of which at least 90% of its surface is a structural multilayer composite, said method comprising: providing an assembly comprising a layer of leather; at least one monolayer comprising parallel aligned fibers and a matrix material; and optionally at least one polymeric film layer, said assembly having two outer surfaces, one being the layer of leather; and compressing at least 90% of the assembly at a pressure between 6 and 300 bar and temperature between 35 and 120 °C and compressing less than 10% of the assembly at a pressure of less than 5 bar, thereby producing a composite of which at least 90% of its surface comprises structural multilayer composite and less than 10% of its surface comprises flexible composite.

13. The process according to claim 12, whereby at least one of the outer surfaces is in contact with a cover during the compressing, said cover optionally removable therefrom.

14. Use of the structural multilayer composite of any one of claims 1-11 in the manufacture of footwear, sports apparel, clothing, luggage, leather goods for animals, bags and luggage, hats, jackets, wallets, purses, bags, upholstery and gloves.