CLAIMS

WHAT IS CLAIMED IS:

1. A method of imparting a barrier property to a cellulose-based substrate, the method comprising:

preparing a formulation for imparting the barrier property, the formulation comprising a specific saccharide fatty acid ester (specific SFAE); and

contacting a surface of the cellulose-based substrate with the formulation to impart the barrier property to the cellulose-based substrate,

wherein the barrier property is increased water resistance and/or increased lipid resistance,

the specific SFAE is insoluble in water at 25°C, and

the specific SFAE has a melting point higher than 100°C.

2. The method of claim 1, wherein the step of contacting comprises forming a slurry of the formulation and cellulose fiber as the cellulose-based substrate.

3. The method of claim 2, wherein the specific SFAE is present in the slurry at a total concentration of at least 0.025% (wt/wt) of the total cellulose fiber present in the slurry.

4. The method claim 2, further comprising forming a solid article after draining the cellulose fiber from the slurry, the solid article possessing the barrier property.

5. The method of claim 4, wherein the article is selected from the group consisting of paper, paperboard, bacon board, insulating material, a carton for food storage, a compost bag, a bag for food storage, release paper, a shipping bag, weed-block/barrier fabric or film, mulching film, plant pots, packing beads, bubble wrap, laminates, envelopes, gift cards, credit cards, gloves, raincoats, OGR paper, a shopping bag, diapers, membranes, eating utensil, a tea bag, a container for coffee or tea, a container for holding hot or cold beverages, a cup, a plate, a bottle for carbonated liquid storage, a bottle for non-carbonated liquid storage, a lid, film for wrapping food, a garbage disposal container, a food handling implement, a fabric fibre, a water storage and conveying implement, a storage and conveying implement for alcoholic or non-alcoholic beverages, an outer casing or screen for electronic goods, an internal or external piece of furniture, a curtain, upholstery, fabric, film, a box, a sheet, a tray, a pipe, a tube, a water conduit, clothing, a medical device, pharmaceutical packaging, a contraceptive, camping equipment, cellulosic material that is molded, and combinations thereof.

6. The method of claim 1, wherein the step of contacting comprises coating the surface of the cellulose-based substrate with the formulation.

7. The method of claim 6, wherein the specific SFAE is present at a weight of at least 0.05g/m^2 on the surface of the substrate.

8. The method claim 6, wherein the cellulose-based substrate is an article selected from the group consisting of paper, paperboard, bacon board, insulating material, paper pulp, a carton for food storage, a compost bag, a bag for food storage, release paper, a shipping bag,

weed-block/barrier fabric or film, mulching film, plant pots, packing beads, bubble wrap, oil absorbent material, laminates, envelops, gift cards, credit cards, gloves, raincoats, OGR paper, a shopping bag, diapers, membranes, eating utensil, a tea bag, a container for coffee or tea, a container for holding hot or cold beverages, a cup, a plate, a bottle for carbonated liquid storage, a bottle for non-carbonated liquid storage, a lid, film for wrapping food, a garbage disposal container, a food handling implement, a fabric fibre, a water storage and conveying implement, a storage and conveying implement for alcoholic or non-alcoholic beverages, an outer casing or screen for electronic goods, an internal or external piece of furniture, a curtain, upholstery, fabric, film, a box, a sheet, a tray, a pipe, a tube, a water conduit, clothing, a medical device, pharmaceutical packaging, a contraceptive, camping equipment, cellulosic material that is molded, and combinations thereof.

9. The method of claim 1, wherein the barrier property imparted to the cellulose-based substrate is increased lipid resistance, and the increased lipid resistance is provided by the specific SFAE in the in the absence of any secondary hydrophobes.

10. The method of claim 1, wherein the formulation further comprises a soluble saccharide fatty acid ester (soluble SFAE) which is soluble in water at 25°C.

11. The method of claim 10, wherein the formulation is a liquid system consisting essentially of the specific SFAE and the soluble SFAE.

12. The method of claim 1, wherein the formulation further comprises one or more glycerides and/or one or more fatty acid salts.

13. The method of claim 1, wherein the cellulose-based substrate imparted with the barrier property exhibits a 3M grease KIT test value of between about 3 and about 12.

14. The method of claim 1, wherein the surface of the cellulose-based substrate imparted with the barrier property exhibits a water contact angle greater than 90°.

15. The method of claim 1, wherein the surface of the cellulose-based substrate imparted with the barrier property exhibits an HST value of at least 65 secs.

16. The method of claim 1, wherein the specific SFAE has a melting point higher than 125°C.

17. The method of claim 1, wherein the saccharide moiety of the specific SFAE is selected from lactose, maltose, raffinose, or trehalose.

18. The method of claim 1, wherein the fatty acid group(s) of the specific SFAE are one of more selected from stearate, laurate, myristate, or palmitate.

19. The method of claim 1, wherein the specific SFAE includes a blend of one or more saccharide monoesters and saccharide diesters.

20. The method of claim 1, wherein the saccharide moiety of the specific SFAE is chitosan.

21. An article obtained by the method according to any preceding claim.

22. The article according to claim 21, wherein the article is selected from the group consisting of paper, paperboard, bacon board, insulating material, a carton for food storage, a compost bag, a bag for food storage, release paper, a shipping bag, weed-block/barrier fabric or film, mulching film, plant pots, packing beads, bubble wrap, laminates, envelops, gift cards, credit cards, gloves, raincoats, OGR paper, a shopping bag, diapers, membranes, eating utensil, a tea bag, a container for coffee or tea, a container for holding hot or cold beverages, a cup, a plate, a bottle for carbonated liquid storage, a bottle for non-carbonated liquid storage, a lid, film for wrapping food, a garbage disposal container, a food handling implement, a fabric fibre, a water storage and conveying implement, a storage and conveying implement for alcoholic or non-alcoholic beverages, an outer casing or screen for electronic goods, an internal or external piece of furniture, a curtain, upholstery, fabric, film, a box, a sheet, a tray, a pipe, a tube, a water conduit, clothing, a medical device, pharmaceutical packaging, a contraceptive, camping equipment, cellulosic material that is molded, and combinations thereof.

23. The article of claim 22, wherein a surface of the article exhibits a 3M grease KIT test value of between about 3 and about 12.

24. The article of claim 22, wherein a surface of the article exhibits a water contact angle greater than 90°.

25. The article of claim 22, wherein a surface of the article exhibits an HST value of at least 65 secs.