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(54) **SPRAY-ON ANTI-SOIL FORMULATIONS FOR FIBERS, CARPETS AND FABRICS**

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(57) **ABSTRACT**

Disclosed are spray-on anti-soil formulations, and methods for treating fibers, carpets, and fabrics with the same. The anti-soil formulations comprise a synergistic blend of an anti-soil component and a stain blocker component adapted to be sprayed-on a fiber, carpet, or fabric instead of known exhaust applications. The anti-soil component can be either fluoro-chemical or non-fluorochemical based, while the stain blocker can comprise any chemical that blocks positively charged dye sites. Fibers, carpets, and fabrics treated with the anti-soil formulations exhibit superior anti-soil characteristics compared to sprayed-on fluorochemicals and exhibit similar anti-soil characteristics compared to known exhaust application.

SPRAY-ON ANTI-SOIL FORMULATIONS FOR FIBERS, CARPETS AND FABRICS

FIELD OF THE INVENTION

[0001] The invention relates to spray-on anti-soil formulations, for all fibers and specifically, to spray-on anti-soil formulations for polyester and olefin fibers, carpets, and fabrics. The anti-soil formulations comprise a synergistic blend of an anti-soil component and a stain blocker component. Soil repellant fibers, carpets, and fabrics, with improved anti-soil properties, are also disclosed. Also disclosed herein are processes for making soil repellant fibers, carpets, and fabrics.

BACKGROUND OF THE TECHNOLOGY

[0002] Carpets are currently treated with topical chemistries for improved stain resistance and/or soil resistance. For nylon carpets, both stain blocker (e.g. acid dye blocker) and anti-soil with fluorochemicals are traditionally used. For polyester carpets, such as 2GT and 3GT carpets, and polypropylene carpets, either no topical chemistry is applied or only anti-soil is topically applied. Polyester and polypropylene carpets typically do not require a stain blocker topical treatment because of inherent stain resistance and lack of amine end groups that function as dye sites.

[0003] Topical application can be in the form of exhaust application (i.e. flex-nip process at high (300-400 wt. %) wet pick-up), which is known to be an improvement over spray-on applications at 10-20 wt. % wet pick-up of anti-soil. Exhaust applications typically use higher amounts of water and energy to dry and cure the carpet. Spray-on fluorochemical products are designed to use less water and energy than exhaust applications, but do not impart satisfactory anti-soil properties.

[0004] While various processes are in use in the carpet industry for the dyeing and finishing of carpets, some large scale and some small, most of the broad loom carpet made today is dyed and finished on a continuous dye range. This is done mainly in one of two ways: In one case a two stage process is employed, where the carpet is steamed and dyed first, steamed, rinsed, and excess water extracted, then stain blocker (SB) is applied, the carpet is again steamed and washed, and then fluorochemical (FC) is applied in the form of a foam or liquid spray and the carpet is finally dried. (See e.g. U.S. Pat. Nos. 5,853,814; 5,948,480 and WO2000/000691). In the second, somewhat improved case, called the co-application process, the carpet is also steamed and dyed first, steamed again, rinsed and extracted; and then a blend of SB and FC is applied together at high wet pick up, after which the carpet and chemicals are exposed once again to steam to fix the treatment, followed by drying. (See e.g. U.S. Pat. Nos. 6,197,378 and 5,520,962).

SUMMARY OF THE INVENTION

[0005] There is a desire to reduce the overall usage of topical anti-soil formulations, especially formulations that contain fluorochemicals, for environmental and cost reasons. Thus, anti-soil compositions that can be applied by spray-on applicators are in demand because spray-on processes use less water and energy to dry than exhaust applications. However, current spray-on compositions do not impart satisfactory anti-soil properties at the necessary low wet pick-up during application.

[0006] Therefore, it is desirable to develop anti-soil compositions that can be applied via spray-on processes at low wet pick-up. Such compositions would be ideal for carpets made from dyed fiber that has no need for further exposure to exhaust processes. Also, rug mills that do not have facilities to apply anti-soil compositions via exhaust processes would benefit from such a spray-on composition.

[0007] The invention disclosed herein provides a spray-on anti-soil composition comprising an anti-soil component and a stain blocker component. The spray-on anti-soil composition can be used with a variety of fibers, carpets, and fabrics, such as those manufactured with olefin and polyester polymer components. Such composition is counter-intuitive, since certain olefin and polyester fibers, carpets, and fabrics do not require stain blockers because they are inherently stain resistant. Thus, there is a surprising synergistic effect with a composition comprising both an anti-soil component and a stain blocker component. The anti-soil component can be either fluorochemical or non-fluorochemical based. Polyester and olefin carpets treated with the disclosed compositions show superior anti-soil properties over the same carpets treated with known fluorochemical anti-soil compositions. Also disclosed are processes for making soil repellant fibers, carpets, and fabrics.

[0008] In one aspect, an anti-soil composition comprising an anti-soil component and a stain blocker component is disclosed. The anti-soil composition is adapted to be sprayed-on a fiber at a wet pick-up of between about 8% and about 40%. The anti-soil composition can be comprised of a high specific surface energy chemical or other material, for example a fluorochemical that imparts high specific surface energy properties such as high contact angles for water and oil, or even a non-fluorochemical particulate material having similar properties. Stain blockers can comprise any acidic fiber coating chemical, such as a stain blocker chemical designed to impart acid dye stain resistance by association with positively charged dye sites such as amine end groups.

[0009] In another aspect, a fiber comprising a sprayed-on surface treatment comprising an effective amount of a stain blocker is disclosed. The stain blocker is present at an on weight of fiber from about 500 ppm to about 4%. The fiber can have a polypropylene or polyester polymer component. The fiber can be manufactured into carpet or fabrics. The surface treatment can further comprise an anti-soil component.

[0010] In a further aspect, a carpet treated with the disclosed anti-soil composition having a Delta E soil resistance rating of less than about 10 at 15,000 walk cycles is disclosed. The carpet has an initial L value in the range from about 58 to about 62.

[0011] In yet another aspect, a carpet treated with the disclosed anti-soil composition having a Delta E soil resistance rating of less than about 4 after 15,000 walk cycles and after one hot water extraction is disclosed. The carpet has an initial L value in the range from about 58 to about 62.

[0012] In yet a further aspect, a method of treating a fiber is disclosed, comprising: (a) contacting said fiber with an anti-soil composition comprising an anti-soil component and a stain blocker component at a wet pick-up between about 10-20 wt. %; and (b) drying said fiber. The contacting can be done by spraying. The stain blocker is present after drying at an on weight of fiber from about 500 ppm to about 4%. The fiber can have a polyester or polypropylene polymer component.

Definitions

[0013] While mostly familiar to those versed in the art, the following definitions are provided in the interest of clarity.

[0014] OWF (On weight of fiber): The amount of chemistry that was applied as a % of weight of fiber.

[0015] WPU (Wet pick-up): The amount of water and solvent that was applied on carpet before drying off the carpet, expressed as a % of weight of fiber.

DETAILED DESCRIPTION OF THE INVENTION

[0016] An anti-soil composition is disclosed comprising an anti-soil component and a stain blocker component. The composition is adapted to be sprayed on a fiber, carpet, or fabric at a wet pick-up of between about 8 wt. % and about 40 wt. %. Anti-soil compositions for use in the disclosed anti-soil compositions impart high specific surface energy properties such as high contact angles for water and oil (e.g. water and oil "beads up" on surfaces treated by it). The anti-soil component can comprise a fluorochemical dispersion, which dispersion may be predominantly either cationic or anionic, including those selected from the group consisting of fluorochemical allophanates, fluorochemical polyacrylates, fluorochemical urethanes, fluorochemical carbodiimides, and fluorochemical quanidines. Alternatively, the fluorochemical can have less than or equal to eight fluorinated carbons, including less than or equal to six fluorinated carbons. Example fluorochemical anti-soil components include: DuPont TLF 10816 and 10894; Daikin TG 2511, and DuPont Capstone RCP. Non-fluorinated anti-soil components can include: silicones, silsesquioxanes and fluorosilanated and fluoroalkylated particulates, anionic non-fluorinated surfactants and anionic hydrotrope non-fluorinated surfactants, including sulfonates, sulfates, phosphates and carboxylates. (See U.S. Pat. No. 6,824,854, herein incorporated by reference).

[0017] Stain blocker compositions for use in the disclosed anti-soil compositions comprise an acidic moiety which associates with polymer amine end groups and protects them from staining by acidic dye stains. The general category of chemicals suitable to the process of the instant invention can comprise any chemical that blocks positively charged dye sites. Stain blockers are available in various forms such as syntans, sulfonated novolacs, or sulfonated aromatic aldehyde condensation products (SACs). They are usually made by reacting formaldehyde, phenol, polymethacrylic acid, maleic anyhydride, and sulfonic acid depending on specific chemistry. Further, the stain blocker is typically water soluble and generally penetrates the fiber while the anti-soil, usually a fluorochemical, is a non-water soluble dispersion that coats the surface of fiber.

[0018] Examples of stain blockers include, but are not limited to: phenol formaldehyde polymers or copolymers such as CEASESTAIN and STAINAWAY (from American Emulsions Company, Inc., Dalton, Ga.), MESITOL (from Bayer Corporation, Rock Hill, N.C.), ERIONAL (from Ciba Corporation, Greensboro, N.C.), INTRATEX (from Crompton & Knowles Colors, Inc., Charlotte, N.C.), STAINKLEER (from Dyetech, Inc., Dalton, Ga.), LANOSTAIN (from Lenmar Chemical Corporation, Dalton, Ga.), and SR-300, SR-400, and SR-500 (from E. I. du Pont de Nemours and Company, Wilmington, Del.); polymers of methacrylic acid such as the SCOTCHGARD FX series carpet protectors (from 3M Company, St. Paul Minn.); sulfonated fatty acids from Rockland React-Rite, Inc., Rockmart, Ga); and stain resist chemistries from ArrowStar LLC, Dalton and Tri-Tex, Canada.

[0019] The anti-soil composition is adapted to be sprayed-on fibers, carpets, and fabrics, such that the stain blocker on weight of fiber is from about 500 ppm to about 4%, including from about 1000 ppm to about 3%, from about 0.5% to about 2%, and from about 0.5% to about 1%; and the fluorine based anti-soil component on weight of fiber is from about 50 ppm to about 800 ppm fluorine, including from about 100 to about 500 ppm fluorine, and from about 100 ppm to about 300 ppm. The wet pick-up of composition is between about to 8-40 wt. %, including from about 10-20 wt. %, from about 10-15 wt. %, and from about 10-12 wt. %.

[0020] Common stain blockers use sulfonated moieties as part of the chemistry, which results in the presence of sulfur on the treated fiber. The sulfur content can range from about 50 ppm with 5% stain blocker to about 1 ppm with 0.1% stain blocker on weight of fiber. Thus, based on the above stain blocker concentrations, the sulfur content on weight of fiber will range from about 0.5 ppm to about 40 ppm, including from about 1 ppm to about 30 ppm, from about 5 ppm to about 20 ppm, and from about 5 ppm to about 10 ppm. Sulfur content can be determined by x-ray diffraction or other methods.

[0021] Carpets treated with the various aspects of the disclosed anti-soil composition exhibit Delta E soil resistance ratings of less than about 10, including less than about 9, and less than about 8, at 15,000 walk cycles. It should be noted that the Delta E will be a function of initial color of the carpet. The above results are with respect to a carpet color in the range from about 58 to about 68 L value. Further, carpets treated with the various aspects of the disclosed anti-soil composition exhibit improved Delta E soil resistance after hot water extraction compared to fluorochemical only treated carpets. When the carpet is darker, or L value is less than this range specified, the soiling delta will also be less (i.e. it will be harder to see the color change in a carpet that is darker). The stain blocker from the anti-soil composition is present on the carpet at an on weight of fiber from about 500 ppm to about 4%, including from about 1000 ppm to about 3%, from about 0.5% to about 2%, and from about 0.5% to about 1%. Also disclosed is a fiber comprising a sprayed on surface treatment comprising an effective amount of a stain blocker. The stain blocker can be any of the components described above. The stain blocker is present on the fiber at an on weight of fiber from about 500 ppm to about 4%, including from about 1000 ppm to about 3%, from about 0.5% to about 2%, and from about 0.5% to about 1%. The surface treatment can further comprise any of the anti-soil components described above. Prior to drying the fiber, the surface treatment is present at a wet pick-up between about 10 to about 20 wt. %, including between about 10 to about 15 wt. %, and between about 10 and about 12 wt.%. The fiber, by itself or blended with non-treated fibers, can be manufactured into carpets or fabrics. The fiber can have a polyester (e.g. PET or PPT) or olefin (e.g. polypropylene) polymer component. An effective amount of sprayed-on surface treatment results in around the same as or better anti-soil characteristics as the same fiber treated with an exhaust process.

[0022] Further disclosed is a method of treating a fiber. The method comprises: (a) contacting said fiber with an anti-soil composition comprising an anti-soil component and a stain blocker component at a wet pick-up between about 10-20 wt. %; and (b) drying said fiber. The anti-soil component and stain blocker component can be any of the chemicals disclosed above. The contacting can be done through a spray-on application at a low wet pick-up. The drying can be done using any type of oven, convention dryer, or forced hot air application. Drying temperatures can range from about 230° F. to about 280° F., including from about 245° F. to about 260° F. Drying temperatures can range from about 1 to about 4

minutes, including from about 1 to about 3 minutes. Wet pick-ups can also range from about 10 to about 15 wt. %, including from about 10 to about 12 wt. %. After drying, the stain blocker is present at an on weight of fiber from about 500 ppm to about 4%, including from about 1000 ppm to about 3%, from about 0.5% to about 2%, and from about 0.5% to about 1%. If a fluorine based anti-soil component is used, the fluorine based anti-soil component on weight of fiber is from about 50 ppm to about 800 ppm fluorine, including from about 100 to about 500 ppm fluorine, and from about 100 ppm to about 300 ppm. The fiber can have a polyester or polypropylene polymer component.

[0023] The fiber, by itself or blended with non-treated fibers, can be manufactured into carpets or fabrics. Further, the disclosed method can be used to treat carpets or fabrics, rather than the fibers. In addition, the disclosed method can be used for pigmented fibers (also known as solution dyed) as well as dyed fibers. This will include carpets made from polyester. Polypropylene is usually solution dyed. The anti-soil composition may or may not include a fluorochemical. Fluorochemical compositions can be cationic or anionic in their formulations, and the disclosed anti-soil compositions can use both.

[0024] The combination of anti-soil and stain blocker yields a surprisingly synergistic anti-soil composition that is more effective at improving soiling resistance of carpet. This is surprising because stain block, by itself, does not impart any anti-soil characteristics to fibers. Further, stain block typically is not usually required with polyester (e.g. PET and PPT) and olefin (e.g. polypropylene) fibers because these polymers lack amine end groups that function as acid dye sites and are inherently stain resistant. The combination of anti-soil and stain block components on olefins and polyesters is synergistic, as surprisingly low levels of application can be effective. Those well versed in the art can select chemistries which are not specifically used as stain blockers but have other closely related properties (such as sulfonated low molecular weight polymers, polymeric binders, soft coatings etc), for blending with anti-soil formulations to obtain the disclosed improvements. These modifications are still considered as part of the invention. Further, because of the synergistic effect, the anti-soil composition can be applied to the fiber, carpet, or fabric via spray-on application instead of exhaust application, while still maintaining superior anti-stain properties.

EXAMPLES

[0025] The following are examples of polyester and polypropylene rugs treated with the anti-soil compositions disclosed above compared to a standard anti-soil fluorochemical treated rug and as well as rug with no treatment. Selection of alternative anti-soil components and stain blocker components, fibers and textiles having different surface chemistries will necessitate minor adjustments to the variables herein described.

[0026] Test Methods

[0027] Walk Test: A description of the walk test is as follows:

[0028] 1. Walk way selection: Select a walk way with a highest traffic volume possible. The samples should be located 20 to 30 feet from an outside entrance. Always use walk off areas (example: carpet tiles) on both ends of the test extending at least 6 to 8 feet. Determine the number of traffics by electric eye counters or pad counters. This method will not work well if groups of large number of people come in at the same time.

[0029] 2. Sample Preparation and Installation

[0030] Determine size of the hallway for the walk test. The length of hall way will determine the number of samples and sample size. One can use 12" min width (the smallest size) to 24" width.

Method for Soiling Test

[0031] One set of sample carpets or multiple set of samples can be installed. Measure the initial L, a, b (using a Minolta spectraphotometer) of samples. As the soiling proceeds, take readings of L, a, b, and calculate Delta E. This delta E represents the color change of the sample when compared to the sample of the same carpet prior to soiling. When the Delta E reaches a high value, it will be time to hot water extract (HWE) and measure delta E after cleaning. This process can be repeated to obtain data over multiple cleanings and traffic cycles.

Example 1

[0032] In this test, a PET rug of 37 Oz weight, with a beige color having a L value of around 65 was sprayed on with various fluorochemical chemistries to a fluorine level of about 300 ppm on rug. The fluorochemical chemistries were from DuPont and Daikin. Table 1 shows anti-soil chemistry make up. Pieces of these carpets were installed for a walk test and Delta E's were measured using a Minolta Spectra photometer at various intervals of traffic. Measurements of L, a, b, for 5000, 10,000, 15,000, and 17,500 cycles of traffic were made and Delta Es were calculated. At 17,500 cycles of traffic, the carpets were hot water extracted with detergent. The L, a, b values were again recorded after cleaning and Delta E's were calculated. Table 1 data shows that soiling was very high (over 16 Delta E) and even after cleaning, with high Delta E's over 9. Therefore spray application of such chemistries do not result in improved soiling performance.

TABLE 1

Sample	Spray on Chemistry and Application	Conc. of chemistry in anti-soil	Initial L value	Delta E at 5000 cycles	Delta E at 10000 cycles	Delta E at 15000 cycles	Delta E at 17500 cycles	Delta E after 17500 and after cleaning
1	Daikin TG 2511 (8%)	25.37 grams/L	65.4	15.8	16.5	16.7	17.5	9.81
2	DuPont TLF 10816 (2.5%)	80.9 grams/L	65.9	16.9	18.8	19.1	18.9	9

TABLE 1-continued

Sample	Spray on Chemistry and Application	Conc. of chemistry in anti-soil	Initial L value	Delta E at 5000 cycles	Delta E at 10000 cycles	Delta E at 15000 cycles	Delta E at 17500 cycles	Delta E after 17500 and after cleaning
3	DuPont TLF 10894 (2.5%)	80.9 grams/L	66.1	15.1	15.5	15.7	16.3	9.1

Example 2

[0033] In this test, a PET rug of 30 Oz weight, with a beige color having L value of around 58 was sprayed on with various fluorochemical chemistries to a fluorine level of about 300 ppm on carpet. The fluorochemical chemistries were from DuPont and Daikin and included a stain blocker S-801, made by INVISTA. Table 2 shows anti-soil chemistry make up. Pieces of these carpets were installed for a walk test and Delta E's were measured using a Minolta Spectra photometer at various intervals of traffic. Measurements of L, a, b, for 5000, 10,000, 15,000 cycles of traffic were made and Delta E's were calculated. At 15,000 cycles of traffic, the carpets were hot water extracted with detergent. The L, a, b values were again recorded after cleaning and Delta E's were calculated. Table 2 data shows that soiling was much improved (lower Delta E) at 15,000 cycles (lower Delta E) for Samples 6 and 7, which were based on the disclosed anti-soil compositions when compared to Sample 4, which was untreated carpet sample and Sample 5, which was treated with a conventional application process. Sample 7 in Table 2 uses the same fluorochemical as used in Sample 3 in Table 1, but performs much better in soiling due to using the blend as per this invention. Further, when the samples were cleaned after 15,000 cycles, Samples 6 and 7 showed a Delta E improvement of 64% to 70%, while Samples 4 and 5 showed a Delta E improvement of only about 50%. After cleaning, Delta E results of Samples 6-7 are low enough that they are acceptable commercially. Carpets treated with the disclosed anti-soil compositions respond better to carpet cleaning than traditionally treated carpets and have superior soiling results throughout walk test including after cleaning.

TABLE 2

Sample	Spray on Chemistry and Application	Conc. of chemistry in anti-soil	Initial L value	Delta E at 5000 cycles	Delta E at 10000 cycles	Delta E at 15000 cycles	Delta E after 15000 and after cleaning
4	Untreated	N/A	58.4	11.2	13.5	13.1	6.44
5	DuPont TLF 10816 (2.5%)	80.9 grams/L	62.6	10.7	11.6	11.3	5.74
6	Daikin TG2511 (8%) + S-801	20.4 grams/L of TG 2511 and 135 grams/L of S-801	61.2	6.8	8.8	9.3	3.35
7	DuPont TLF 10894 (2.5%) and S-801	80.9 grams/L of TLF 10894 and 135 grams/L of S-801	61.9	6.3	7.1	8.2	2.33

Example 3

[0034] Tests were conducted with polypropylene carpets having flowery carpet design. Table 3 lists various polypropylene carpet items and how they were treated. Chemistries used were Daikin TG 2511, DuPont TLF 10816, TLF 10894 and Capstone RCP. All samples were 35 ounce rug carpets and application levels of fluorochemical were about 300 ppm Fluorine.

TABLE 3

Sample	Spray on Chemistry and Concentration	Concentration of Chemistry in anti-soil
8	Untreated	N/A
9	Dakin TG 2511 (8%)	20.4 grams/L
10	Dakin TG 2511 (8%) + S-801	20.4 grams/L of TG 2511 + 135 grams/L of S-801
11	DuPont TLF 10816 (2.5%)	80.9 grams/L
12	DuPont TLF 10894 (2.5%)	80.9 grams/L
13	DuPont Capstone RCP (5%) and S-801	40.6 grams/L of RCP and 135 grams/L of S-801

[0035] Because of the flowery design, the Walk Cycle test measurements of Delta E were not possible. However, visual inspection showed that Sample 13 followed by Sample 10, demonstrated superior soil resistance than the remaining samples. This improvement was also visible after cleaning. These samples with superior soiling performance were prepared by various aspects of the disclosed process.

[0036] It should be noted that Daikin TG 2511 was a cationic formulation and DuPont chemistries were anionic for-

mulations. This shows that the process of this invention works well for different types of formulations of fluoro chemical chemistries.

[0037] The invention has been described above with reference to the various aspects of the disclosed anti-soil composition, treated fibers, carpets, fabrics, and methods of making the same. Obvious modifications and alterations will occur to others upon reading and understanding the proceeding detailed description. It is intended that the invention be construed as including all such modifications and alterations insofar as they come within the scope of the claims.

1. An anti-soil composition comprising an anti-soil component and a stain blocker component, wherein said composition is adapted to be sprayed-on a fiber at a wet pick-up of between about 8 wt. % and about 40 wt. %.

2. The anti-soil composition of claim **1**, wherein said anti-soil composition comprises a fluorochemical.

3. The anti-soil composition of claim **1**, wherein said fiber is pigmented or solution dyed.

4. The anti-soil composition of claim **1**, wherein said fiber has a polymer component selected from the group consisting of polyester and polypropylene.

5. The anti-soil composition of claim **2**, wherein said fluorochemical is selected from the group consisting of: fluorochemical allophanates, fluorochemical polyacrylates, fluorochemical urethanes, fluorochemical carbodiimides, fluorochemical quanidines, and fluorochemicals incorporating C-2 to C-8 chemistries.

6. The anti-soil composition of claim **2**, wherein said fluorochemical has less than or equal to six fluorinated carbons.

7. The anti-soil composition of claim **2**, wherein said fluorochemical is a fluorochemical urethane

8. The anti-soil composition of claim **1**, wherein said stain blocker is selected from the group consisting of: syntans, sulfonated novolacs, sulfonated aromatic aldehyde condensation products (SACs) and/or reaction products of formaldehyde, phenol, polymethacrylic acid, maleic anyhydride, and sulfonic acid.

9. A fiber comprising a sprayed-on surface treatment comprising an effective amount of a stain blocker.

10. The fiber of claim **9**, wherein said fiber has a polymer component selected from the group consisting of polyester and polypropylene.

11. The fiber of claim **9**, wherein said stain blocker is present at an on weight of fiber from about 500 ppm to about 4%.

12. The fiber of claim **9**, wherein said stain blocker is present on an on weight of fiber from about 1000 ppm to about 3%.

13. The fiber of claim **9**, wherein said stain blocker is present on an on weight of fiber from about 0.5% to about 2%.

14. The fiber of claim **9**, wherein said surface treatment further comprises an anti-soil component.

15. The fiber of claim **14**, wherein said anti-soil component comprises a fluorochemical.

16. The fiber of claim **15**, wherein said fluorochemical is selected from the group consisting of: fluorochemical allophanates, fluorochemical polyacrylates, fluorochemical urethanes, fluorochemical carbodiimides, and fluorochemical quanidines.

17. The fiber of claim **15**, wherein said fluorochemical has less than or equal to six fluorinated carbons.

18. The fiber of claim **15**, wherein said fluorochemical is a fluorochemical urethane.

19. The fiber of claim **15**, wherein said fluorine in said anti-soil component is present at on weight of fiber from about 50 ppm to about 800 ppm.

20. The fiber of claim **9**, wherein said stain blocker is selected from the group consisting of: syntans, sulfonated novolacs, sulfonated aromatic aldehyde condensation products (SACs), reaction products of formaldehyde, phenol, polymethacrylic acid, maleic anyhydride, and sulfonic acid.

21. The fiber of claim **9** having a sulfur content on weight of fiber from about 0.5 ppm to about 40 ppm.

22. The fiber of claim **9**, wherein said surface treatment is present at a wet pick-up between about 10-20 wt. % prior to said fiber being dried.

23. A carpet or fabric made from a plurality of fibers from claim **9**.

24. A carpet having an initial L value in the range from about 58 to about 62 comprising a sprayed-on surface treatment comprising the anti-soil composition of claim **1** and having a Delta E soil resistance rating of less than about 10 at 15,000 walk cycles.

25. A carpet having an initial L value in the range from about 58 to about 62 comprising a sprayed-on surface treatment comprising the anti-soil composition of claim **1** and having a Delta E soil resistance rating of less than about 4 after 15,000 walk cycles and after one hot water extraction.

26. The carpet of claim **24**, wherein said stain blocker is present at an on weight of fiber from about 500 ppm to about 4%.

27. The carpet of claim **24**, wherein said stain blocker is present at an on weight of fiber from about 1000 ppm to about 3%.

28. The carpet of claim **24**, wherein said stain blocker is present at an on weight of fiber from about 0.5% to about 2%.

29. The carpet of claim **24**, wherein said Delta E soil resistance is less than about 9 at 15,000 walk cycles.

30. The carpet of claim **24**, wherein said Delta E soil resistance is less than about 8 at 15,000 walk cycles.

31. The carpet of claim **24**, wherein said carpet comprises polyester fibers.

32. A method of treating a fiber comprising: (a) contacting said fiber with an anti-soil composition comprising an anti-soil component and a stain blocker component at a wet pick-up between about 10-20 wt. %; and (b) drying said fiber.

33. The method of claim **32**, wherein said stain blocker is present after drying at an on weight of fiber from about 500 ppm to about 4%.

34. The method of claim **32**, wherein said contacting comprises spraying said composition onto said fiber.

35. The method of claim **32**, where said drying is done at a temperature from about 230° F. to about 280° F.

36. The method of claim **32**, wherein said stain blocker component is present at an on weight of fiber from about 500 ppm to about 4% after said drying step.

37. The method of claim **32**, wherein said anti-soil component is a fluorochemical and said fluorine is present at an on weight of fiber from about 50 ppm to about 800 ppm.

38. The method of one claim **31**, wherein said fiber comprises a polymer component selected from the group consisting of polypropylene and polyester.

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